Certification Programs: Pro & Con . . . . . Pg. 34

AIR CONDITIONING HEATING & REFRIGERATION NEWS
The Newspaper of the Industry
RESIDENTIAL — COMMERCIAL — INDUSTRIAL
July 10, 1961

Issued every Monday at 450 West Fort St., Detroit 26, Michigan
Established 1926
Member, Associated Business Publications ABP ABC Member, Audit Bureau of Circulations

Vol. 93, No. 11, Serial No. 1,685
Reentered as second class matter October 3, 1936, at the post office at Detroit, Mich., under the Act of March 3, 1879.
Subscription Price, $6 Per Year (U. S. and Canada). Foreign: $10.00 Per Year.
Trade Mark Registered U.S. Patent Office. Copyright 1961, by Business News Publishing Co.

✓ INSIDE THIS ISSUE

AUTOMATED BAKERY uses refrigeration throughout 7
FAN AND BLOWER DESIGN symposium indicates how much is still to be learned..... 8
WORLD TRADE BRIEFS..... 9
HEAT PUMP IN FOOD MART uses heat from refrigerated cabinets to warm store in winter..10
PERIMETER INSULATION — Manufacturer illustrates 4 major techniques and answers key questions 11
VALANCE SYSTEM'S HEATING PERFORMANCE does not match its cooling efficiency...15
FUEL OIL STANDARDS—Manufacturer cites benefits in uniformity 17
ST. LAWRENCE DAM HEAT PUMP does job where heating load doubles cooling.....22
CERTIFICATION PROGRAMS: Pro and con 34
DISTRIBUTOR'S SCHOOLS designed to upgrade work of air conditioning dealers 36
AIR CONDITIONING OLD OFFICE BUILDING 40
WORLD TRADE 9
SERVICE BULLETINS 12
EDITORIAL 26
WHAT'S NEW 28
VACATION SCHEDULE 33

Ervasti To Direct Wolverine Marketing

ALLEN PARK, Mich.—John M. Dumser has resigned as director of marketing at Calumet & Hecla's Wolverine Tube Div.

E. W. Ervasti

Edward W. Ervasti, formerly assistant director of marketing, has been appointed director of marketing. Ervasti's headquarters will be the Wolverine Tube administrative office here.

Engineers Fight Battle of

Room Units Vs. Central Systems

By Frank J. Versagi

DENVER — Take a typical two-story, one-family existing house. Give its dimensions, orientation, and geographic location to two engineers. Tell one engineer he is to air condition the house with room units; tell the second authority he must design a central system for the job. What will they come up with in unit capacities? in costs?

Joseph Giordano, vice president of engineering for Fedders Corp., and Kenneth Behr, chief application engineer for Lennox Industries, took on this assignment for ASHRAE and presented two of the most stimulating discussions which occurred during the engineering society's 68th annual meeting here.

Questions and answers following the two discussions were so specifically penetrating that figures on compressor breakdowns, unit life expectancies, causes of failures were offered from the panel and from the floor in a session that ran overtime and had to be called off by panel moderator Fred Appel, Whirlpool Corp., so that the speakers and audience could go to lunch.

Giordano stated the case for room units. In introduction, he pointed out that since Fedders manufactures both central and room units, the company looks at the competition between the two types of cooling equipment "with a great amount of objectivity. In practice, we feel that the two markets, while overlapping somewhat, are not necessarily at odds. Generally, new homes are moving toward central equipment; the big sales in room units are for existing houses and structures."

The Fedders vice president also offered that the cooling requirements of many important highly populated areas of the country are "impulse-oriented." People in areas which experience only occasional hot spells tend to consider air conditioning after a night or two of being unable to sleep and, almost always, their first unit goes into a bedroom.

Too, Giordano suggested, room units allow "budgeted air conditioning," the purchase and location of units as the need and desire arises. They allow zone control, with the attendant savings in operating costs from not

(Continued on Page 3, Col. 1)

Get $1 Per Sq Ft More for Cool Office

MINNEAPOLIS — Air conditioning in Chicago commands an additional rental of 85 cents to $1 per sq ft for office buildings, Donald T. Sheridan, Chicago real estate operator, told the National Association of Building Owners & Managers during their recent convention here.

Sheridan, who is executive vice president of L. J. Sheridan & Co., reminded the owners and managers that air conditioning today is a necessity in first class office space despite what he termed "an unsatisfactory recapture period and return on investment.

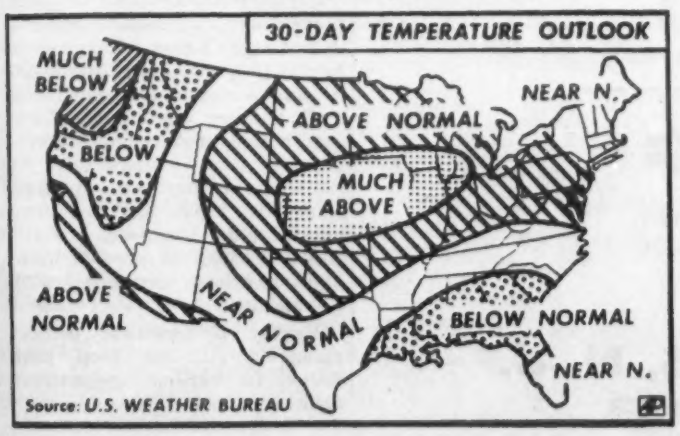
"Tenants of national scope are requiring that all office space which they occupy be air conditioned," he said, "and the comfort and efficiency provided by cooling appeals to all but a few tenants.

"By the expenditure of the

(Continued on Page 32, Col. 3)

The Prediction for July—HOT!

'Above Normal' Temperatures Forecast For Most Heavily Populated Areas



Blame Smog for 170 N. Y. Deaths In '53

NEW YORK CITY—Polluted air was named as the probable cause of 170 or more deaths in the New York metropolitan area in the period from Nov. 12-24, 1953, when an acid-laden mass of hot and dirty air blanketed the city, according to the report of a study made by the New York City Department of Air Pollution Control supported by a grant from the U.S. Public Health Service.

The report issued early this month showed that during this period the mortality rate in New York City rose from an average of 218 to 227 deaths daily (for the years 1950-1957) to 244 deaths daily. Further, a review of the mortality statistics showed that in these seven years there were only 10 days of normal mortality rates (that is, when accidents taking large number of lives didn't figure in the statistics) in which the number of deaths exceeded 250, and six of these 10 occurred in the "smog period" in November, 1953.

It was on the basis of these statistics that it was surmised

(Continued on Back Page, Col. 1)

President Signs Housing Act of 1961

WASHINGTON, D. C.—President Kennedy signed the National Housing Act of 1961 on the last day of June and apparently left it pretty much up to the Federal Housing Administration to determine who will be eligible for the more extensive terms on home improvement loans.

Basically, the new law author-

(Continued on Page 45, Col. 1)

Westinghouse Agrees To Buy Thermo-King

PITTSBURGH—Westinghouse Electric Corp. has announced an agreement to purchase the assets of Thermo King Corp., Minneapolis, manufacturer of cooling equipment for railway cars, trailer trucks, buses, and missiles.

Westinghouse reportedly agreed to acquire Thermo King assets in exchange for approximately $32.5 million of Westing-

(Continued on Page 45, Col. 3)

Subcontractor Groups Gather In St. Louis

Study Federation To Face Common Problems

WASHINGTON, D. C.—Representatives of specialty contractor organizations will meet July 17 in St. Louis to consider the possibility of joining in a federation which would make possible a new united approach to problems common to subcontractor groups.

Invitations to attend this organizational meeting at the Sheraton-Jefferson hotel were signed by Walter B. Lyle, president of the Contracting Plasters' & Lathers' International Assn. Organizations in this industry who received invitations included Refrigeration & Air Conditioning Contractors Assn.; Mechanical Contractors Assn.; Sheet Metal & Air Conditioning Contractors Assn.; National Assn. of Plumbing Contractors; and National Electrical Contractors Assn.

Lyle's letter of invitation pointed out that the specialty contractor associations have met and acted informally on certain matters over a period of years, and declared that it was through such joint efforts that the so-

(Continued on Back Page, Col. 3)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

The Clairvoyant Redeker

Annually speaking, the most popular "Dope" columns for many years have been those devoted to baseball—a topic which practically every American businessman loves to discuss.

These baseball "Dopes" normally appear at the beginning of each season and at World Series time.

They include not only current anecdotes and reminiscence, but pennant race predictions by John J. Redeker (retired father of Phil Redeker, intimate of Casey Stengel and John McGraw and Red Schoendienst, and astute observer of our national pastime).

Last year, AH&RN possibly was the only newspaper in the country which published an accurate prediction (John J. Redeker's) of the World Series outcome: Pirates over the Yankees in seven games.

In April of this year Mr. Redeker (John, not Phil) supplied us with the following forecasts:

National League: Los Angeles, St. Louis, Pittsburgh, in a close race.

American League: Detroit, Baltimore, Cleveland, in an even closer finish.

By happenstance, "Dope" was in Hong Kong when THE clairvoyant Redeker's predictions arrived, and so our early-season baseball column was skipped.

We hasten to rectify that omission by submitting a midsummer baseball amalgam at All-Star Game time.

Cooperative Unions

Labor negotiations have become a fact of life in baseball—and we don't mean just player contracts.

An usher's strike at Milwaukee comes to mind. Braves' gen-

(Continued on Page 21, Col. 1)

Kohnstamm Heads Morrison Products

BUFFALO—At a meeting of the board of directors of Morrison Steel Products, Inc., here, M. Jacque Kohnstamm was elected president, the company announced.

Kohnstamm

Isadore Morrison, who served as president since 1958, is no longer connected with the company, the announcement said.

The board re-elected the following officers: A. J. Harsch, vice president; Sheldon M. Weisberg, treasurer; Edward H. Kavinoky, secretary.

Entering the employ of Morrison Steel Products in 1935, Kohnstamm was elected vice president and a director in 1944, and executive vice president in 1958.

Morrison Steel Products, founded 1912, manufactures and distributes nationally "Mor-Sun" heating and air conditioning equipment, steel sectional residential and commercial garage "Roly-Doors," "Roly Houses," and Morrison service, utility, and van bodies.

H. M. Zentner Dies

MILWAUKEE — Harold M. Zentner, 60, president of Refrigeration Parts Co. here, died recently of a heart attack at his home. He founded his wholesale refrigeration, air conditioning, and heating supplies firm 20 years ago. He is survived by his wife, Viola, and two sons, Robert W. and James J.

Knight, Ammerman In New Chromalox Posts

PITTSBURGH — Ernest N. Calhoun, president of Edwin L. Wiegand Co., electric heat equipment manufacturer, has announced the appointment of Frank B. Knight to the position of vice president and G. Edward Ammerman to general sales manager of Chromalox, Inc., Murfreesboro, Tenn., a subsidiary.

Knight, who joined Chromalox three years ago as general manager, now assumes a more direct responsibility for all company operations.

Ammerman will now direct sales activities in connection with all Chromalox electric heating products. He has been associated with the company for the past seven years as manager of the appliance products division.

Firing Zealous Steward, Encouraging Union Membership Draw NLRB Slap

WASHINGTON, D. C.—Firing a union steward because he is zealous in carrying out his duties in that capacity violates the National Labor Relations Act, according to a trial examiner for the National Labor Relations Board.

At least, the examiner has ruled, it is in the case involving steward Cavanaugh, representing United Association Local 502, and his employer, Herston L. Brown, doing business as Brown's Plumbing & Heating Co., Michigan City, Ind.

Trial Examiner Fannie M. Boyls found that Brown's discharge of Cavanaugh, because of the zealous manner in which he sought to police the contract and otherwise represent the employes' interests, clearly discouraged strong and effective unionism and violated Section 8 (a) (3) of the act.

She also found that Cavanaugh's actions while purporting to act as steward for the union were in fact within the scope of his duties as steward.

"But even if, upon occasions, his actions went beyond the duties intended to be bestowed by the union upon its stewards, his conduct in seeking to represent the employes' interests were protected under Section 7 of the act and his discharge for engaging in such conduct was accordingly a violation of Section 8 (a) (1), if not 8 (a) (3)."

The trial examiner also found that, under union compulsion, the company encouraged membership in Local 502 by discriminating in regard to the hire and tenure of employes or applicants, in violation of Section 8 (a) (3) and (1) of the act.

Miss Boyls concludes:

"I have no doubt that respondent [Brown], depending, as he did, upon the union for his supply of competent workmen, may have acquiesced in unlawful hiring practices through fear of a union strike or boycott but such a circumstance—even before the Taft-Hartly amendments which permit the employer to file charges against the union—has never constituted a legal defense to employer discrimination against employes."

In an intermediate report on the case, Miss Boyls recommended to the NLRB that the company be ordered to:

1. Cease discharging or in any other manner discriminating in regard to the hire and tenure of employment of employes because of the zealous manner in which they perform their duties as representatives of UA Local 502, or any other labor organization, or engage in concerted activities for the mutual aid and protection of themselves and other employes.

2. Cease entering into, or giving effect to any arrangement, contractual or otherwise, with Local 502, or any other labor organization, which requires membership in such labor organization as a condition of employment of applicants or employes.

3. Offer reinstatement and back pay to Cavanaugh, the charging party.

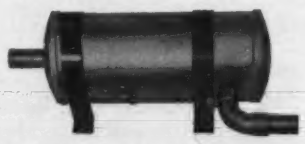
the companion to Thermobank...

KRAMER THAW® SYSTEM

A NEW AUTOMATIC HOT GAS DEFROST SYSTEM

for applications where LOW FIRST COST *is the major consideration*

One fan evaporator with heat exchanger



Metering accumulator with brackets

If low first cost is the major factor, the new Kramer THAW SYSTEM offers more than any competitive system. (For sharp freezing loads, or where compressor is outdoors, Thermobank is recommended.)

- No compressor overloading with hold-back valve.
- Faster defrosting because more heat is available.
- Positively cuts liquid return to the compressor.
- Has the largest liquid accumulator.
- Foolproof metering device.
- No clogging with removable strainer.
- Oil problems eliminated by gravity drain.
- No unnecessary defrost cycles.
- Heated copper drain pan.
- Double pan to protect heating coil.
- Aluminum casing on evaporator.

Removable Strainer

Timer

Hot Gas Solenoid Valve

Hold-Back Valve

Hot Gas Strainer

Check Valve

Write for Catalog T-480

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Ranco Names Three To Engineering Posts

COLUMBUS, Ohio — John Liebermann, Thomas Syfert, and Lewis Eggert have been named to new engineering posts, it was announced recently by J. E. Kumler, vice president research and engineering, Ranco, Inc.

Liebermann, who joined Ranco in 1949, has been appointed chief engineer.

Syfert, who is project manager, has been associated with Ranco since 1951.

Eggert is assistant project manager. He has been with Ranco in various engineering positions since 1950.

Room Units Vs. Central System--

(Continued from Page 1)

operating those units where cooling is not required at the moment.

Using Room Units

On the St. Louis-located house in the problem Giordano came up with the following data:

Assume 2 in. of insulation in the roof, a ventic attic area, two doors, and 100 sq ft of glass area. Calculated heat loss is 34,000 Btuh.

This requirement can be met with two 7,500-Btuh room units, one each in the living room and master bedroom, with four 6,000-Btuh units in the other rooms. There will be six additions of 115-volt lines.

Costs for the units (at $200 for the larger and $165 for the smaller) will be $1,100. The electrical work will cost about $240, so the entire installed cost of the six room units will be $1,340 for whole-house cooling. If only the three bedrooms were cooled, the cost would be $670.

Giordano estimated that central air conditioning for this house would cost $1,500—$800 for the unit, the rest for installation, alteration of the ductwork, and the like.

He went on to estimate that the four 6,000-Btuh units would pull 900 watts each; the two 7,500-Btuh units would pull 940 watts each for a total of 5,480 watts. Estimating operating time and converting to kwh, he came up with 6,576 kwh at 1.5 cents per kwh, for a continuous operating cost of $98 a year. On the same basis, Giordano estimated that a central system would cost $114.60 to operate.

Using Central System

Kenneth Behr spoke for the central system. Before presenting his case he teased Giordano, "Sixty percent of the purchasers of central air conditioning have had experience with room units, so we wish you luck!"

Behr also assumed 2 in. of roof insulation. In addition, he assumed ½-in. wall insulation, double glazing ("because the area has a -5° winter design temperature, and it is reasonable to assume that the storm sashes will be left up in summer"), five occupants. Total heat loss in winter would be 65,000 Btuh; heat gain in summer would be 26,272 Btuh — split at about 15,000 Btuh for the first floor, 11,000 Btuh for the second floor.

Assuming a 3° temperature swing would require a unit delivering about 26,000 Btuh; working with a 4½° swing allows use of a unit rated for 22,600 Btuh; using the 24-hour method would permit use of a 20,000-Btuh unit. In practice, the job could be handled with a nominal 2-ton unit; these go up to 28,000 Btuh, at which range they are sometimes referred to as 2½-ton units.

Say the house is eight years old and has floor diffusers for heating. The ductwork will be a standard trunk system running the full length of the basement, with one additional run-off from the supply plenum. Condensing unit will be located on the side of the house, near the chimney, and set so the air blows parallel to the house; this reduces the possibility of a noise complaint from the neighbor. Air discharge in the house must be upward.

Two-ton coil in the plenum, refrigerant lines less than 15-ft long. System is evacuated and leak-checked, but not purged.

Contractors were surveyed to determine cost of such a central system. Average cost came to $700 for a 2-ton system, $850 for a 2½-ton job—about $350 a ton.

At first, the difference between Giordano's and Behr's estimates seems on the order of 2-to-1. Giordano estimated room units at $1,340 and a central unit at $1,500. Part of this difference, of course, is due to the different calculations of heat loss. By assuming wall insulation and double-glazing, which Giordano did not, Behr came up with a heat loss of just over 26,000 Btuh to Giordano's 34,000 Btuh.

Dividing both total costs by their respective system capacities: Giordano—29,000 Btuh or 2.4 tons for $1,340 gives a cost of about $540 a ton. Behr—2½ tons for $850 gives $340 a ton. Using Giordano's estimate of $1,500 for a 3-ton central system, gives a cost of $500 a ton.

It is obvious, therefore, that even after discounting the differences in load calculations due to different assumptions about insulation and U-factors, there is significant difference in the estimated cost of air conditioning. And from the floor came doubt that a 2 or 2½-ton air conditioner can be installed for about $350 a ton. Discussion with Behr developed the fact that he had drawn on experience which Lennox had with a house very similar to the problem house, one in which no major alterations were needed in the existing ductwork, where the condensing unit could be placed so near the cooling coil that short refrigerant lines were possible, where only one addition had to be made to the electrical wiring to accommodate the unit.

Discussing the advantages of a central system, Behr cited first the operating costs. "Remember we sell Btu, and it is how many Btu you get per watt which determines the operating cost." Using figures listed in the specifications published by AIR CONDITIONING, HEATING & REFRIGERATION NEWS, Behr calculated that "Central air conditioning gives an average of 8½ Btu per watt while room units give about 7 to 7½ Btu per watt."

"You can change filters in one place, rather than in several, and the one place is not in the living room where a little dirt can soil furnishings.

"Central air conditioning gives the lowest sound levels in the conditioned area, not only because the condensing unit is outside, but because the air distribution can be sized correctly for complete comfort at the right air velocities and balance for each room.

"Central air conditioning allows you to take advantage of the storage effect of furnishings, allows you to treat the air in one place, whether you want to treat it for temperature alone or for cooling, humidification, filtration, ionization, or anything else."

Which Lasts Longer?

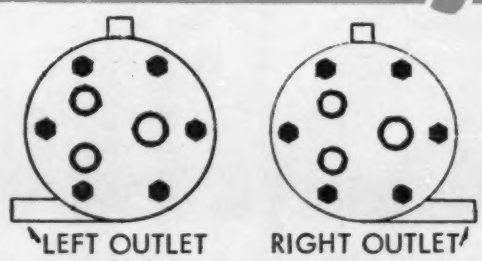
The question-and-answer period began with a request for an estimate of the life of cooling equipment. Which lasts longer, a room unit or a central unit?

"No one can make a factual claim for greater life for either system," insisted Giordano. "While I am aware that some

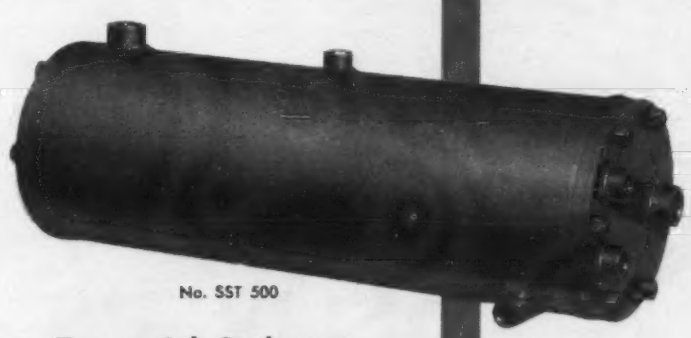
(Continued on next page)

all copper WATER CHANNELS

on all model SST shell and tube CONDENSERS



Left hand tangential outlets shipped unless otherwise specified



No. SST 500

- Tangential Outlets on SST-500 Models or Larger
- Maximum Resistance to Corrosion
- Longer Assured Peak Performance
- Cleanable by Any Method . . . with Minimum Labor
- Rated at 15,000 BTU/Hr/Ton

Most Advanced Design Available

These popular shell and tube condensers are equipped with copperized tube sheets to pre vent corrosion. More effective operation at less cost.

STANDARD REFRIGERATION COMPANY

Since 1920

Send for catalog on complete line.

National Distributor for Primore Rotalock Valves
3014 FILLMORE STREET • CHICAGO 12, ILLINOIS

Symposium--

(Continued from preceding page)

people assume a 20-year life for central systems and significantly less for a room unit, there is insufficient data to support such an estimate."

The Fedders executive cited a survey his company took on its 1950 room units which showed many of them still operating and which showed that the company's inventory of service parts exceeded requirements.

"It is important to remember, too," Giordano said, "that most room units are distributed nationally by larger concerns unlike many central systems which are manufactured and sold regionally. Therefore, the room units are made to stand up in all sorts of climates, including the notorious Florida sea coast."

Behr countered that central systems, by their very design, give longer life. "Consider that coil areas can be larger, head pressure can be kept within reason, fan speeds can be adjusted, controls which cannot be placed in a room unit can be used, more controls to give protection."

From the floor, a consulting engineer offered an estimate of 7½-year life for room units, 10 years for central systems, 20 years for large central systems. "We assume, in talking with mortgage bankers, that we will have to replace room units three times during the 25-year mortgage life," he estimated.

"But how many times are the room units changed just because they have grown aesthetically obsolescent, not because they are inoperative," countered Giordano. "We know of many instances where room units have been changed because the interior decor was re-done."

Off the floor came a related question: What is the difference in reliability between a remote central unit and a self-contained unit?

The answer came from Frank J. Versagi, editor of AIR CONDITIONING, HEATING & REFRIGERATION NEWS. (Versagi gave the keynote address for the ASHRAE symposium, and his talk will appear in another issue of the NEWS.)

"While I am not at liberty to divulge the actual figures," Versagi offered, "the consensus among manufacturers is that, if they were given an *either-or* alternative, they would always like to sell self-contained equipment. Here *they* control the quality of the refrigeration cycle, and they are not subject to the troubles which come from improper field installation. However, the greater flexibility of installation of the split systems has resulted in an increasing proportion of sales going remote, rather than self-contained."

A manufacturer in the audience offered his experience. "We have been able to prove that the rate of compressor return is three times higher for split systems than for self-contained."

Behr agreed with the general premise that installation procedures can make the difference between a good job and a chronic troublemaker. "We always recommend, for example, that the system be evacuated, leak-checked, then charged. The common technique of attempting to dry out a system by purging with refrigerant is, in our opinion, inadvisable."

What Fails First?

Off the floor came a question concerning the relative reliability of the components in a refrigeration cycle: What fails first, the compressor, fans, electrical systems, valves?

Giordano offered that Fedders' experience has been that the majority of failures is with things electrical—relays, controls, wiring. Versagi supported this estimate by adding that NEWS surveys among service contractors show that calls of an electrical nature account for 60-70% of the firms' work loads. "Leaks are the next biggest single source of calls," the NEWS editor said, "with some surveys showing them accounting for 20-25% of all service work."

How Long Will It Take Poorly Installed System To Break Down?

From the audience: If, as you say, most such failures occur on built-up, rather than self-contained systems, is there any way to know that a system is improperly installed? When will the unit fail, in a few hours, in months, in a couple years?

"Manufacturer consensus is that a field-installed unit which has been improperly installed or applied will begin to act up within the first year. The feeling seems to be that if a system makes it through the first year, it has been properly applied, and it will continue to run—barring accidents—for the life of the equipment," stated Versagi.

"We have proof and documentation which show that 60% of all major service problems occur within the first year after application, and that the problems are chiefly electrical," offered a manufacturer from the floor.

"I don't think that is a safe generalization, offered another manufacturer. "We had a self-contained system which worked well in the field for over three years before it began to develop chronic difficulties across the country."

"That is different than a field-installed job," countered another member of the audience. "If your system went bad after three years, it was due to some engineering fault or defective component which slipped by your design people."

How long can we realistically expect equipment to last, asked another. Can we expect five years, 10 years, 25 years from our present equipment?

"Reliability studies," stated a manufacturer, "show that the mean wear-out life of such things as pistons, rods, is about 50 years; the wear-out life of electrical insulation is about 20 years."

Why Do Some Units Fail In 1 to 3 Years?

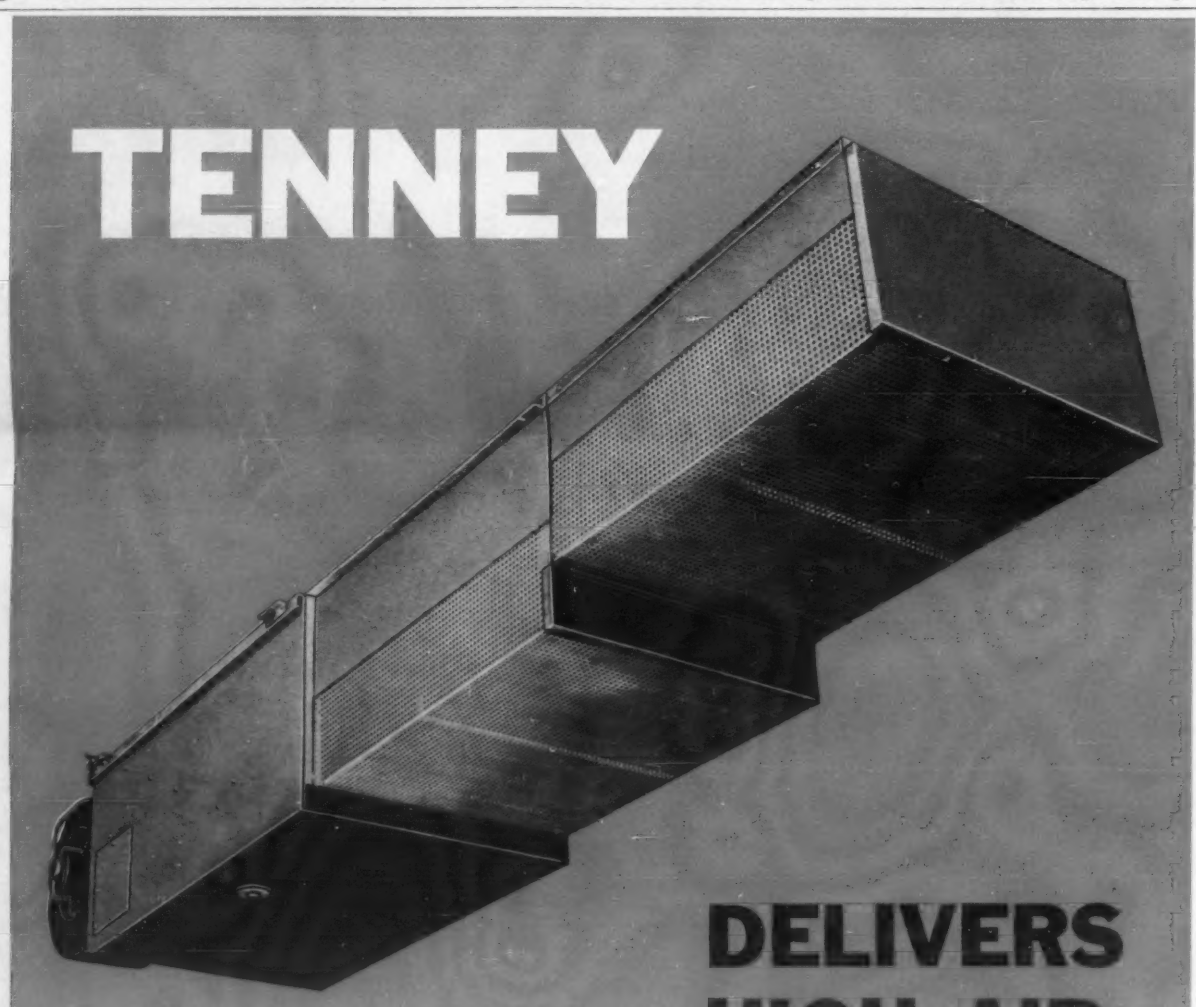
Then why do units fail in one year? in three years?

"Because in addition to mechanical wear-out, there is chemical wear-out which may be influenced by contaminants in the system."

"Which brings us back to the basic premise—that improper installation can make the difference between a long-lived and a short-lived installation."

"Mr. Giordano," asked someone off the floor, "how can a thermostat located other than in the occupied area do a good job of controlling temperature? In a room unit, the stat is in the cooling unit, itself."

"Remember that a room unit moves air even more than a central system," the Fedders vice president explained, "and it is *return* air which the unit-mounted thermostat senses; return air is, for practical purposes, at the temperature of the occupied zone."



Tenney LV Unit
A Deluxe Package

DELIVERS HIGH AIR VOLUME AT LOW VELOCITY

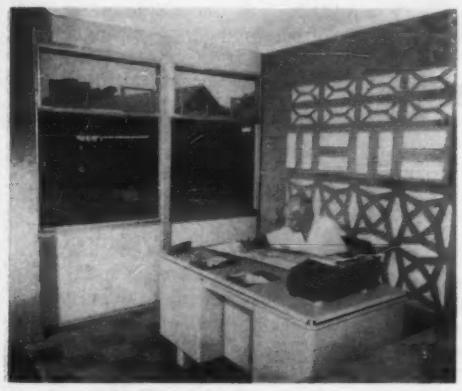
Obtaining low velocity is easy, obtaining high air volume is simple, but combining them into one deluxe package is an achievement. This step forward in evaporator design combines the low air velocity of a coil and pan arrangement with the positive air circulation of a blower. LV offers a new standard of performance for meat and prepack rooms, for florist storage boxes — for any refrigerated enclosure where a premium is set on saleability of product and comfortable working conditions.

Write today for complete information on the new Tenney LV.

Refrigeration, Heating & Air Conditioning Products Division

Tenney ENGINEERING, INC.

1090 SPRINGFIELD ROAD • UNION, NEW JERSEY



USE of Continental curtain wall sandwich panel in the new office building of Faber Cement Block Co. is shown here.

New Curtain Wall Unit Incorporates Electric Heat

NEW YORK CITY — A new curtain wall heating unit has been developed here by Continental Radiant Glass Heating Corp.

Continental's president, B. A. Needham, said use of the unit is expected to result in a substantial reduction in construction costs for the building industry.

Much Painting, Plastering Eliminated

"Not only does it provide the heating and insulation as an integral part of the curtain wall unit, but it also eliminates the necessity of plastering and painting the interiors of the outside walls—which must be done with conventional curtain wall units," the announcement said.

"The Continental Curtain Wall, a thin sandwich panel, consists of an outer skin, which can be of any material normally used in a curtain wall construction—i.e. glass, stainless steel, porcelainized steel, bronze, aluminum, etc., an outer skin of a specially developed alloy of steel which has eliminated the undesirable hydrogen and CO (carbon-oxygen) gases normally inherent in steels and cause fish scaling of surface when heated, which has the heating element fused to its reverse side.

"The inside skin is available in any color desired by the architect or builder. The insulation is contained between the two skins and can be of almost any type specified."

Come To Temperature In 72 Seconds

Other advantages claimed for these new units are that they come to temperature in 72 seconds and give out "longer" infrared rays, "which enables individuals in a room to be comfortable at a lower temperature than they would be normally. It is also possible to incorporate more wattage per square inch with this unit (up to 20 watts per square inch)."

Continental has a "showcase" for its new product in the recently completed office building of the Faber Cement Block Co., Inc. off Route 59, Monsey, N. Y.

Regarding cost, the company said:

"These units are made to architects' specifications and cost is dependent on what material is used for the outer skin. Price range would be from $5 to $10 per square foot depending on materials used."

For Week Ended June 17

Dallas-Ft. Worth Air Conditioning Sales

Central residential air conditioning unit sales in the Dallas-Ft. Worth area for the week ended June 17 totaled 49 units, according to reports from air conditioning dealer - contractors compiled by utility companies.

While this figure represented a substantial decline from the total reported for the previous week, which was the best for the year, it stood up creditably with most other weeks of 1961.

Sale of unitary air conditioners for commercial applications totaled 16 units, a slight increase over the preceding week, although total installed tonnage showed a decline.

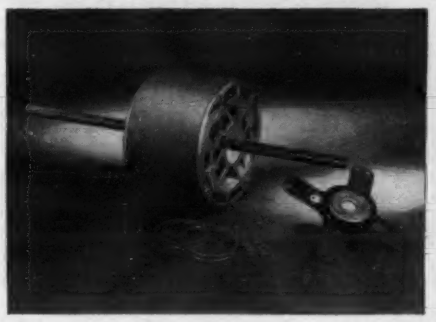
This resume of central unitary unit sales in the Dallas-Ft. Worth area is taken from figures submitted by Texas Electric Service Power & Light Co.; and Lone Star Gas Co., Ft. Worth Div. Co., Ft. Worth Div.; Dallas

Residential

Week (Ends)	No. Jobs	Total Tons
June 17	49	179.5

Commercial and Industrial

Week (Ends)	No. Jobs	Total Tons
June 17	16	119



New motor with adaptor rings, mounting adaptor

WITH THIS GENERAL ELECTRIC REPLACEMENT MOTOR . . .

YOU CAN VARY MOUNTING DIMENSIONS A FULL INCH

Stock this new General Electric fan motor—solve most air conditioner replacement problems

Stock this versatile motor—available in shaded-pole or permanent split-capacitor designs—and you can replace practically any 5½-inch diameter fan motor on today's room air conditioners. General Electric has led in the development of these "change-length" fan motors . . . and now gives you added flexibility in a motor with a full one-inch extension.

Today you're asked to replace motors of many different lengths. You can match most of these varying mounting dimensions by adjusting the position of the special mounting adaptor along the motor's extended thru-bolts. And, you can remove the adaptor entirely for band or thru-bolt mounting.

Special ring adaptors offer you further mounting versatility. You can snap them around the 2¼-inch cushion rings to meet 2½-inch ring requirements.

Extra-long shaft extensions, with extra-long "flats," are standard on this new motor. You can cut the shafts to any length, or to single shaft requirements. A gun-metal-like treatment protects the shaft against corrosion and provides for easy removal of fans in years to come.

Available in ratings from 1/15 to 1/4 hp, this replacement motor gives you the same General Electric quality designed and built into every Form G motor—outstanding moisture resistance, top-notch insulation, and long lubrication life.

Call your nearest General Electric distributor or your G-E Sales Office about this new replacement fan motor today. General Electric Co., Schenectady 5, N. Y. 723-42

Progress Is Our Most Important Product

GENERAL ELECTRIC

Luxury Apartments To Get 70 Tons of Gas Air Conditioning

SANTA ANA, Calif. — What is billed as one of the largest gas air conditioning systems ever planned for strictly residential use in Southern California will be installed in a six-floor, 22-unit luxury apartment project here.

Robert K. Von Der Lohe, manager of commercial and industrial sales for Southern Counties Gas Co., reported that the 70-ton gas air conditioning system is scheduled for installation soon at the Tamerlane apartment project in Santa Ana.

The new system will be used for both heating and cooling at the Tamerlane project.

The Tamerlane, a private ownership "vertical" residence being built by the Osen-Ojeda Development Corp. of Santa Ana, will include 20 two-bedroom residences of 1,500 sq ft each, and two sixth-floor three-bedroom penthouses of 2,400 sq ft each.

The two-bedroom residences are priced from $28,500 to $34,500 and the two penthouses at $79,500 each.

A two million Btu gas-fired hot water boiler and a Carrier automatic absorption machine will be used for heating and cooling the Tamerlane. Additionally, the hot water boiler, through a heat exchanger, will be used to provide hot water for the entire building. Also included in the central air conditioning equipment will be a Drayer-Hanson cooling tower, it was pointed out.

The air conditioning system in the individual residential units will be controlled by Minneapolis-Honeywell two-zone pneumatic controls, which permit simultaneous heating in one room, and cooling in another. Carrier air handlers, with oversize coils, will be installed in each apartment.

A three-pipe system—one for hot water, one for cold water, and a common return—will be utilized throughout the $850,000 building, the announcement said. The air conditioning system piping is being placed in triangular shafts, along with all other building piping. The piping cavities will be sealed with foamed polystyrene rather than individually insulating each pipe.

'Yorkaire 3-Pipe Induction' System Gives La Salle Jackson Bldg. Individual Control

CHICAGO — The air conditioning for the La Salle Jackson building here features the "Yorkaire 3-Pipe Induction" system serving the perimeter.

With this system, every office space has individual temperature control all seasons of the year, according to York Div., Borg-Warner Corp.

Both hot and cold water are available at each induction unit for heating or cooling the area as desired. A special 3-pipe "Duoflow" valve selects varying quantities of either hot or cold water, and modulates its flow to the induction unit coil to maintain desired room temperatures.

This system provides a high degree of air conditioning flexibility since there is no changeover point, it was indicated.

"At outside temperatures below about 45°F, 'free cooling' is available without operating the centrifugal water chillers . . . a solution to the perennial problem of spring and fall operation on mild days," York said.

A total of 1,628 York "low boy" induction units concealed within a continuous panel around each floor, blanket the perimeter with conditioned air. In the fan room, outdoor air and return air are mixed, filtered, dehumidified, and then pressurized and distributed to the induction units.

As this air passes through the unit nozzles, it "induces" room air to provide proper room recirculation. This secondary air is heated or cooled as it passes over the induction unit coil to provide the desired room conditions.

Two York "Turbomaster" water cooling systems located on the second floor provide a total cooling capacity of 1,950 tons.

Beverly Rodeo Hotel Gets 3-Pipe System

BEVERLY HILLS, Calif. — The $1 million-plus, four-story Beverly Rodeo hotel under construction here will utilize a three-pipe air conditioning system.

The core is Drayer-Hanson individual room air conditioning equipment, the West Coast manufacturer reported.

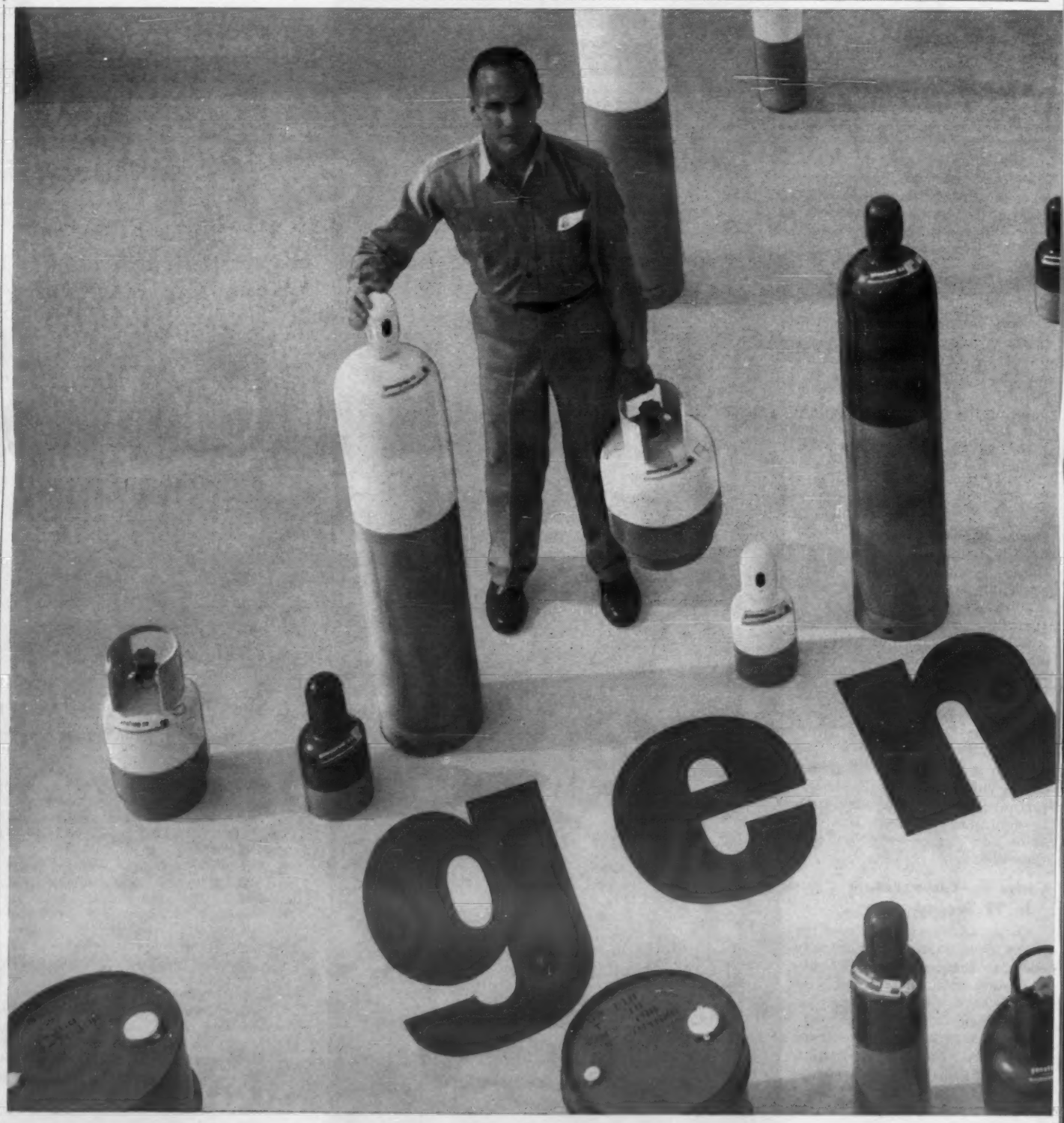
Air conditioning phase is to be installed by J. Herman Co. here. Project architect is Palmer & Krisel, West Los Angeles.

Seventy-nine D-H "Spotaire" LRC units are set for the project via Air Conditioning Supply Co., Drayer's L.A. sales representative.

Boris Kaufman Joins Sacramento Faculty

SACRAMENTO, Calif.—Boris Kaufman, an air conditioning teacher with broad experience in manufacturing and research, is joining the engineering faculty of Sacramento State college here.

Prof. Trevor Davey, head of mechanical engineering, said Kaufman will be assistant professor of mechanical engineering and teach heat transfer courses including air conditioning and refrigeration.



The refrigerants you want...packaged

genetron 11 CCl_3F ORANGE LABEL TRICHLOROMONOFLUOROMETHANE
genetron 12 CCl_2F_2 WHITE LABEL DICHLORODIFLUOROMETHANE
genetron 22 $CHClF_2$ GREEN LABEL MONOCHLORODIFLUOROMETHANE
genetron 113 $C_2Cl_3F_3$ PURPLE LABEL TRICHLOROTRIFLUOROETHANE
genetron 114 $C_2Cl_2F_4$ BLUE LABEL DICHLOROTETRAFLUOROETHANE

Refrigeration Has Vital Role To Play In Sara Lee's Automated Bakery In Chicago

CHICAGO—Kitchens of Sara Lee, Inc., has released details of an installation with Kramer refrigeration equipment in its new multi-million dollar Chicago bakery.

The bakery occupies 140,000 sq ft, is constructed of aluminum glass, and brick, and completely air conditioned to exclude dust, dirt, and heat from outside.

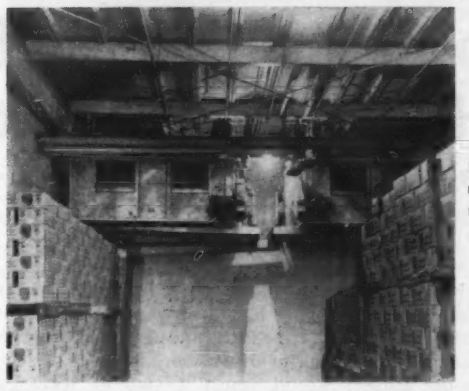
One of the most modern plants in the food processing industry, it is equipped for continuous, automated production of the nationally distributed Sara Lee bakery products.

Pastry making is carried out on an "assembly line" system with dry ingredients being conveyed pneumatically from railroad cars to storage bins and then to the mixing room via pipe line where butter, nut meats, etc., are added.

Weighed dough leaving the mixer is placed on pans, goes to a retarder cooler, is cut to size, conveyed on pans to a proofer and on to the automatic baking ovens. Leaving the ovens the product again is cooled to room temperature, conveyed to the icing department for frosting and still on the conveyor, transported to the blast freezer where it is frozen in the package, eliminating handling.

Finally, the packages are moved into a 144,000-cu ft, -5°F storage room to await distribution via refrigerated truck.

Kramer equipment plays an important part in keeping production moving smoothly on this highly automated line where inadequate capacity or a breakdown could lead to costly shutdowns or spoilage of food in process, it was reported by Kramer Trenton Co.



INTERIOR of -5° storage room showing Kramer Ammonia Evaporators with re-evaporative defrost.

Four Kramer ammonia evaporators with automatic re-evaporative defrost were selected for the critical blast freezer. This freezer, of 28,000-cu ft content, freezes some 4,000 lbs of product per hour at -25°.

The final storage room, following the blast freezer, is maintained at constant temperature by two Kramer ammonia evaporators with re-evaporative defrost and a duct distribution system.

A 16,000-cu ft general storage cooler and a 86,000-cu ft butter cooler are served by Kramer medium temperature evaporators. The Kramer evaporators are individually defrosted automatically by re-evaporative hot gas every four hours. The extremely short defrost period of ten minutes more than meets the required specifications, the manufacturer stated.

"High-side equipment consists of two 75-hp compressors in the hi-stage and two 50-hp rotary boosters," it was pointed out. "The refrigerant is subcooled in a 'constant level' accumulator and circulated by the booster pumps to the low temperature evaporators. All evaporators are controlled by room thermostats with back pressure regulators in the suction lines of the -5° storage room.

"The low temperature portion of the systems is of the recirculating type operating at 8° T. D. while the medium temperature part is on direct expansion at 10° T. D.

"A Brown 20 station electronic instrument is installed in the machine room to indicate air temperatures throughout the building. Air at 50° is circulated under the floors through tile ducts. During the summer this air is discharged internally and in winter to the outside."

Epstein & Sons, Inc. was the architect and engineer for the project. Arnold Colantonio was chief mechanical engineer. Systems Engineering Corp. installed all refrigeration equipment and I. H. Cohler Co. represented the Kramer Trenton Co.

New Tampa Distributor For Hussmann Opened

TAMPA, Fla.—Establishment of a Hussmann distributorship at 3204 Bay to Bay Blvd. here has been announced by Arthur W. Snyder, who recently moved to Florida.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

the way you want them! Take your pick!

NEW! Get facts about "Genetron" 11 solvent in special pressurized cylinders for cleaning out mildly contaminated systems following burnout.

Allied Chemical

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N.Y.

Lau Symposium on Fan and Blower Design Reveals How Much Is Still To Be Learned

By George M. Hanning

DAYTON — Lau Blower Co. shared its knowledge and experience in fan and blower design with 70 project and design engineers representing 38 manufacturers of equipment for the heating and air conditioning industry at a symposium staged at the Lau plant here recently.

However, the most common answer to questions from the highly knowledgeable engineers whose job it is to apply Lau's blowers to specific applications was "We don't know. That is an area that needs exploration."

Harold Farquhar, Lau's chief engineer, set the tone of the two-day gathering, the first of its kind ever staged by Lau, by telling the story of the engineer and the cockroach.

An engineer, the story goes, trained a cockroach to jump over his hand whenever he snapped his fingers. Then the engineer wondered if the insect would jump if two of its legs were removed.

He removed two legs, snapped his fingers, and the cockroach jumped over his hand. Carrying forward the experiment, he removed two more. He snapped his fingers and the cockroach jumped over his hand.

Carrying the experiment to its ultimate conclusion, he removed the creature's last two legs. He snapped his fingers. The cockroach just lay there. He tried it again and again with the same result.

The engineer's conclusion: a cockroach with its legs removed is deaf.

Thus, Farquhar reminded the engineers frequently, Lau has ideas of what may be the answer to many questions, but we may be jumping to the wrong conclusions.

Format of the symposium was the reading of technical papers specifically prepared for this meeting by Lau engineers. The audience was invited to interrupt and challenge what they heard at any time.

While many questions were asked to tie in what was presented with individual engineer's problems, there was only one outright challenge of information presented.

That occurred on a paper presented by Joseph C. Gantner, Lau's assistant chief engineer, in which he called attention to the increase in loading and the effects it could have on marginal drives when smaller pulleys and V-belts are applied to blowers.

He warned that this could bring possible vibration problems, possible increase in field service problems, and possible demands for closer tolerances on purchased parts.

Two engineers from the audience, representing manufacturers of air conditioning equipment, indicated that they had gone to smaller size belts and pulleys and experienced less noise and vibration rather than more. They indicated that their experience had not been long enough, however, to indicate any effect on belt life.

One engineer asked Farquhar what is considered to be normal belt life and got an "I don't know" for an answer.

William Wentling, Lau's director of engineering and research and moderator of the symposium, said that this all depended on application and external conditions. He indicated that some belts life-tested in Lau's laboratory wore out in less than two years and others were still in good condition after running for 10 years.

Other subjects covered at the symposium were system resistances for blower selection and equipment design, how to find the internal resistance of a furnace or air conditioner, push-through versus pull-through blowers, propeller blade design and application.

Also presented were papers on vibration and balance, the effect of furnace heat exchanger design on blower performance, multiple blower operation, and directions for calculating minimum shafts.

Other papers not presented orally but given to the engineers in written form, covered relationship of tip speed, static pressure, outlet velocity, noise, and efficiency; the nozzle chamber method of air flow measurement; and a study and report on the effect of an enclosure on blower performance.

All of these papers, Wentling reminded his audience, were presented as information gained from studies of these subjects and were not to be considered as definitive answers to the problems.

A highlight of the symposium for most of the engineers was the opportunity to tour Lau's plant and to visit the company's wind tunnel and test laboratory. The visitors were not shown Lau's research and development laboratory where experimental work for future applications is carried on.

Other Lau engineers participating in the conference were Bert Brown and James Ranz, Lau project engineers; C. G. Nenedal, chief engineer of Viking Air Products Div.; and Richard Beehler, chief engineer of the Meier Div.

T. I. Byrd, Lau president, greeted the visiting engineers. He suggested that similar conferences may be held in the future if reaction to this one proves favorable.

Highlights of some of the papers presented at the symposium will be published in later issues of the NEWS.

Worthington Reports Missile Contracts

EAST ORANGE, N. J. — Worthington Corp. has reported contracts calling for the delivery of 150 water chilling units to serve seven Atlas (ICBM) Missile sites located throughout the United States.

The units are used to air condition the underground silos at the bases. Trailer truck loads of the chiller units leave the Worthington plant at East Orange each week. The delivery schedule will be completed in July, 1961.

Sites are located in California, Kansas, Nebraska, Oklahoma, Texas, New Mexico, and New York.

Call NATIONAL . . . and Save!
On Special Shaped, Formed or Fabricated Tubing!
Do your products require fabricated or finish-trimmed parts or special tubular shapes? Our specialized skills, backed by 40 years of experience, offer you the opportunity to improve product quality . . . lower unit cost!
Write or call today. Our quotation costs you nothing . . . yet may save you a great deal.
Fastest Delivery in the Industry.
Copper and Brass Tubing — Straight Lengths • Coils • Cut Lengths • Formed Pieces • Special Shapes • Fabricated Parts
The National Copper and Smelting Company
1862 East 123rd Street • Cleveland 6, Ohio • Telephone CEdar 1-2366

World Trade Briefs

AMANA REFRIGERATION, INC., has introduced a room air conditioner designed specifically for export to the tropics and other areas where temperatures reach as high as 125°F. Designated model 150 A 3R5, the 50-cycle unit incorporates special added condenser surfaces, a larger evaporator, and additional tubing to insure efficient operation under high ambient conditions, the company said.

"Extensive field tests indicate the unit will operate satisfactorily at temperatures of 120 to 125°, with voltage fluctuations plus or minus 10% of the rated 230 volts," the company said.

Features include four-way

rust protection with zinc-coated steel given a special zinc phosphate treatment and a two-layer baked enamel finish of specially-formulated epoxy resin. First shipments of the unit are destined for the Middle East.

* * *

MUELLER CLIMATROL DIV. of Worthington Corp. announced the appointment of Kevan A. Durrell as Canadian sales representative. Durrell was formerly associated with Perfex Controls, Ltd., and General Controls Co. He will maintain offices at 2490 Bloor St., W., in Toronto.

* * *

KELVINATOR OF PUERTO RICO, INC., has begun pilot production of electric refrigerators, according to G. T. Etheridge, vice president of the parent company, Kelvinator International Corp.

A team of engineers from Kelvinator's Grand Rapids plant is in Puerto Rico to assist in initial production of the 10-cu ft model and train the permanent staff of Puerto Rican personnel. All major components except refrigeration systems will be produced in the local plant after it has reached regular production.

"The Puerto Rican plant is unique in the worldwide organization of Kelvinator International," Etheridge said. "In addition to producing refrigerators especially designed for the Puerto Rican market, it will serve as a training and proving ground for low-cost, low-volume refrigerator manufacturing."

* * *

CANADIAN HANSON & VAN WINKLE, Toronto, has entered the field of direct application of polyurethane rigid foam. This reportedly is the first Canadian firm to become a custom applicator of rigid foam using a British-made machine.

* * *

A LICENSING AGREEMENT has been completed between Tyler Refrigeration International, C.A., Caracas, Venezuela, and Niles, Mich., U.S.A., and Etablissements Bonnet, Villefranche, Rhone, France. Under the terms of the agreement, a new division of Bonnet to be known as Bonnet-Tyler will manufacture and sell Tyler products throughout France and the French Community.

The announcement was made jointly by Robert L. Tyler, president of Tyler Refrigeration Corp.—parent company of Tyler International—and Pierre Sarrazin, president of Bonnet. Bonnet-Tyler manufacturing and sales in France will be under the direction of Roger Gluntz; export sales will be handled by Tyler International, under the direction of Julian R. Alvarez.

Bonnet, founded in 1830 as a textile machine manufacturer, branched into the refrigeration field in 1860 when it began mak-

ROBERT L. TYLER of Tyler Refrigeration and Pierre Sarrazin, of Etablissements Bonnet at Chateau St. Bernard, Villefranche, after completion of licensing agreement creating Bonnet-Tyler.

* * *

ing compressors. In addition to the new Tyler line, its products include air conditioners, ice-making machines, compressors, water coolers, cold storage equipment, food mixers, dishwashers, and many other food service machines.

* * *

A NEW TYPE of temperature control instrument designed to control reefer cargo temperatures within 1½°F is being employed on the cargo refrigeration systems of the recently-launched *SS Export Banner,* it was reported by Ad. Auriema, Inc., New York City export firm. The systems are equipped with Partlow model GWS controls, which operate on the principle of expansion and contraction of mercury. The controls are used by Carrier Air Conditioning Co. to control the operation of the refrigeration systems it is supplying, the report said.

* * *

GROCERETTE VENDING MACHINES, INC., Long Beach, Calif., reported that international distribution has begun on its food dispensing unit. It said requests for franchises have been received from 10 countries.

* * *

IN LONDON, ENGLAND, the U.S. recently opened the first of the trade centers being established abroad as part of the government's export expansion program. The center is intended for buyers, who will be able to examine products of interest to them and study catalogues and other literature. The staff will pass orders and inquiries on to company representatives or British agents for the products.

* * *

EXPORT OPPORTUNITIES reported by the Business & Defense Services Administration, U. S. Dept. of Commerce:

Vest-Norges Maskinkompani A/S, St. Markevei 8-10, Bergen, Norway, importing distributor, is interested in direct purchase of and agency for commercial refrigeration equipment and parts.

Alfred Kaul & Co., 33-35 Tannenbergstrasse, Wuppertal-E., Germany, importer and wholesaler, is interested in obtaining the exclusive sales agency for U. S. manufacturer of air conditioning equipment for skyscrapers, large stores, hospitals, restaurants, etc. It has been the sales agent for the refrigerator plant of the Adam Opel A.G.

HOW DO YOU JUDGE A DRIER?

BY PERFORMANCE OR BY BASELESS STATISTICS?

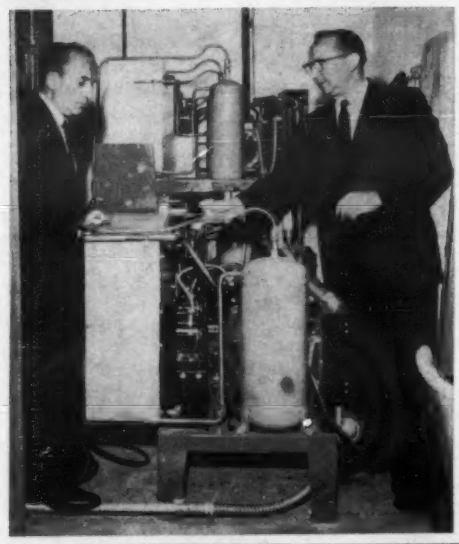
The way some manufacturers talk about filter area you'd think that the bigger the block of desiccant the better job it does. Poppycock! The simple scientific fact is that filter area has very little to do with *filter capacity*...and drying efficiency. The new Ansul "System Boss" drier offers far and away more filter capacity in less space than any other drier.

Another thing...why build a drier that's as fragile as a china tea cup? Most driers *do* get banged around, dropped and abused in shipping and handling. Drop an ordinary drier with a bloc-type desiccant on the concrete and you've got a basket case—waste basket, that is! Drop a "System Boss" and the worst thing that happens is a small dent. There's no core to break or come loose..."Andrite" pelletized desiccant is held securely under rigid spring pressure. Metal flare protectors...2500 psi bursting strength...rugged construction...the Ansul "System Boss" is the best drier ever built and the best value.

See it, drop it, install it...and learn how much abuse (and how much dirt and moisture) a real drier can take. It's handled by better refrigeration wholesalers everywhere.

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN

Heat Pump In Chicago Food Mart Uses Heat from Refrigerated Cabinets To Warm Store In Winter



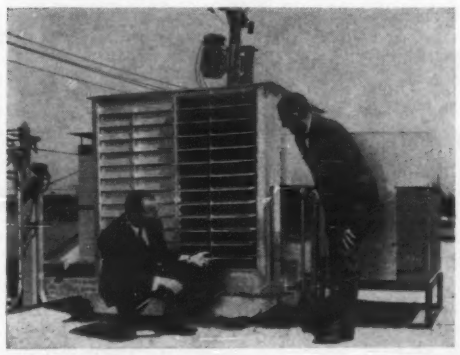
HOW HEAT extracted from refrigerated cabinets is utilized by this heat pump as a source of comfort heating is explained to Bert Osney, merchandising manager of Convenient Food Marts, Inc. (l.), by Guido Restagno, president of Resco, engineer-installer of the heat pump.

Infrared Fixture Helps Near Doorway

CHICAGO — Shopping comfort for customers, supplied by a custom engineered electric heat pump, is featured in a new Convenient Food Mart opened here recently at 10634 S. Halsted St.

The mart is the first all-electric store of its types in Chicago, according to Commonwealth Edison Co. It is comfort conditioned by a 5-ton Carrier heat pump which automatically heats, cools, dehumidifies, and filters the air.

Installed by Resco, of Chicago, the machine is economy-designed to use heat extracted from refrigerated cabinets as a source of heating energy during cold weather operation. The entire "plant" is controlled by a single thermostat.



CHECKING ROOFTOP component of heat pump system containing compressor, condenser, and air intake are Guido Restagno (l.) and Louis Vessel of Commonwealth Edison Co., Chicago.

Another unusual electrical feature of the new food mart is an infrared heating fixture, which is mounted above the checkout counter. The heating unit is designed to provide supplementary heat near the doorway.

Owned by Frank Rodelli, the store is the newest outlet in the growing franchise of Convenient Food Marts, Inc. More than 40 of the superettes are in operation in several states.

Bert Osney, national merchandising manager and executive vice president of the firm, describes the new marts as modern streamlined groceries with competitive chain store pricing. His plans are to have 2,000 stores under the Convenient banner within five years. About 200 will be in the Chicago area.

Like all Convenient Food Marts, Rodelli's store will provide neighborhood shoppers with late hour, 7-day-a-week grocery and market service, according to the announcement.

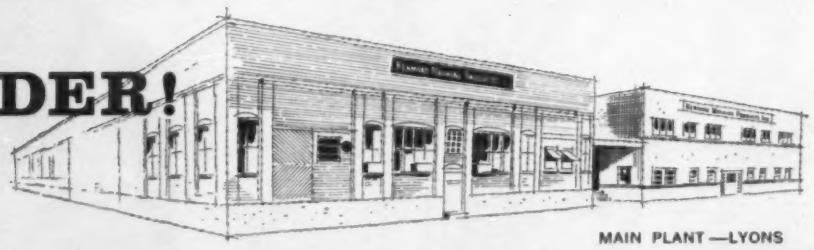
IT'S WISE

PLANT 2—LYONS

TO FOLLOW

NORWAY PLANT

THE LEADER!

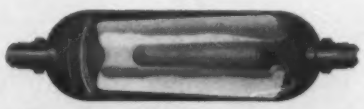


MAIN PLANT —LYONS

KMP WORLD'S LARGEST EXCLUSIVE MANUFACTURER OF REFRIGERATION DRIERS

CANADA PLANT

For the past quarter of a century our business has been devoted exclusively to the manufacture of refrigeration and air conditioning driers, accumulator driers, accumulators, strainers and capillary assemblies. It is not a sideline. Consequently all of our research and engineering efforts have been directed to the development and manufacture of better, more efficient products. One result is the KMP FILTER-KORE drier, the first 100% solid core molecular sieve drier made to do a better job for the manufacturer and serviceman. We believe this specialization is why over 187 of the world's leading refrigeration and air conditioning manufacturers buy KMP products.



KMP KENMORE MACHINE PRODUCTS, INC. · LYONS, NEW YORK
IN CANADA: Kenmore Machine Products (Canada) Limited, Grimsby, Ontario
IN EUROPE: Kenmore Inc., A.S., Oslo, Norway

San Diego Motel Installs Gas Air Conditioning

LA PUENTE, Calif.—Reporting that gas-fired air conditioning unit sales have definitely increased in southern California this year with a noticeable amount of installations being located in hotels and motels, The Payne Co. here cited a recent installation at The Town House motel in San Diego.

University Mechanical Engineering Contractors Inc., a heating and air conditioning firm located in that area, installed the system. The motel includes 57 individually cooled units. Each room utilizes ¾-ton air handling units which are connected to six Payne absorption chillers.

"The rooftop-type installation is divided into three separate zones to provide greater efficiency and economy in operation, it was stated.

"The system also employs a part load control for two-stage cooling when needed. Guests may select their own indoor temperature by means of individual controls to allow quick cool-down (high-speed blower) and then maintain the desired rate of cooling with a low-speed blower selection.

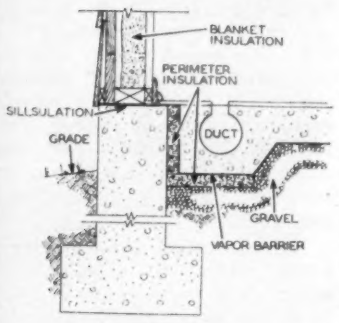
"Air conditioning was added to the construction which had an existing heating system comprised of individual room wall-type radiant heaters."

The management of The Town House initially approved one wing for the addition of air conditioning, but later decided to extend the contract to include the entire motel.

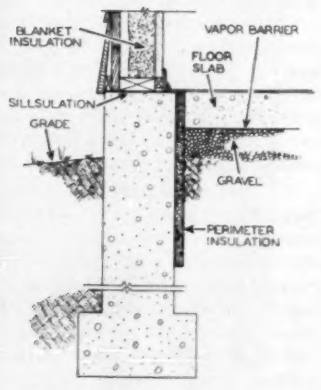
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Perimeter Insulation

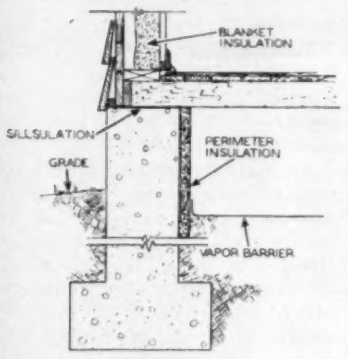
4 Major Techniques Illustrated; Key Questions Answered by Manufacturer



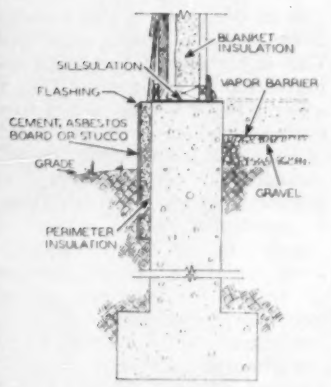
Perimeter Ductwork in Slab



Concrete Slab on Ground



Crawl Space Insulation



Outside Walls

EXAMPLES of major perimeter insulation techniques according to study completed by Forty-Eight Insulations, are shown above.

AURORA, Ill.—The increase in construction of homes on concrete floor slabs or over crawl spaces has initiated new cost savings for the home buyer, while at the same time putting new emphasis on perimeter insulation, according to Forty-Eight Insulations, Inc. here.

"Variances in the types of slab construction, both at above and below grade, have distinct advantages while at the same time creating problems for the builder and questions in the minds of the consumer."

Forty-Eight Insulations, which manufactures insulation for industrial, commercial, and residential construction, said it has categorized key questions asked by both builder and consumer in a recent survey. Chief among these were:

Question: Ground temperatures usually vary only about 20° throughout the years. Isn't this too little to be concerned about?

Answer: It is true that heat losses from the concrete slab to the ground are not great, but losses from the perimeter of the slab to the outside air are considerable and perimeter insulation can make a difference in floor temperatures along the outside walls of your home as much as 10° to 20° on very cold days, depending on the insulation thickness.

Question: But, if heating in the home is provided by warm air ducts in the concrete slab, won't this difficulty be overcome?

Answer: The cold floor problem would be pretty much solved, but the heat loss from your higher temperature heating ducts would be as much as 20% greater and the over-all cost to heat your house would be considerably more.

Question: Does perimeter insulation at the edges of the concrete slab show any advantages in summer?

Answer: If you build cold air ducts for air conditioning into the concrete slab, perimeter insulation will effect considerable savings in air conditioning operating expenses because it insulates these ducts from the heat outside.

Question: How does perimeter insulation help keep floors dry?

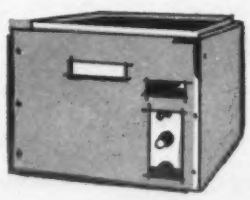
Answer: The coarse gravel fill under your concrete slab prevents the capillary rise of occasional ground water into the slab. But in winter moisture vapor in the air will condense, where the temperature of the slab is below the dew-point of the moisture in the air, to make floors damp and damage floor covering . . . unless the slab is insulated. Perimeter insulation prevents this moisture from forming.

"Normally," the company pointed out, "specifications call for perimeter insulation to have a density of 6 lbs per cubic foot and heat conductance at various thicknesses as follows: ¾ in. -.33, 1 in. -.25, 1½ in. -.17, and 2 in. -13. This is true whether the insulation be asphalt board faced, plain, with no facing, or asphalt, all-enclosed."

WATER COOLER
8 Gallon Bottle Type
$89.50*
*TO DEALERS ONLY
. . . economical . . . efficient . . . streamlined . . . space-saving . . . ⅓ H.P. Tecumseh hermetic unit . . . five year warranty on refrigeration cycle. . . .
Remcor Products Co.
321 E. Grand Avenue,
Chicago 11, Illinois
manufacturers of water coolers since 1910
also available:
10 Gallon Pressure Type Cooler
*$139.50

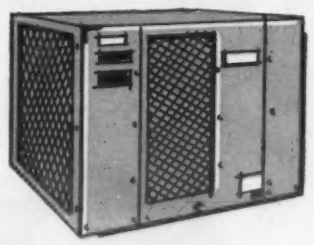
REMCOR
Model CB-2A

GM Delco
OFFERS YOU
A NEW AIR CONDITIONING LINE
CENTRAL RESIDENTIAL COOLING UNITS FOR EVERY TYPE AND SIZE OF HOME, NEW OR OLD! THE ENTIRE MARKET IS YOURS WITH THE GM-DELCO LINE!



COOLING COIL (EVAPORATOR) UNIT
Now there's a Delco-engineered air conditioning unit to fit any Delco furnace. Installation is quick and simple. Also, you can convert your customer's present forced air furnace to central air conditioning with just the right GM-Delco unit to make it easy, practical and profitable!

REMOTE CONDENSER UNIT
The GM-DELCO line includes attractive, weatherproof condensing units in sizes to meet a wide range of needs. Durably built for outdoor installation and designed for the most efficient operation. Ratings from 22,000 to 56,000 BTU/HR. Maximum over-all dimensions—Height 28¾", Width 48⅝", Length 31⅞".



SELF-CONTAINED SYSTEMS
The GM-DELCO line offers you completely self-contained cooling units. Shown is a type for use with hot water, steam or other heating systems without duct work. Easily installed in attic or crawl space with inexpensive duct work.

THE GM-DELCO HEAT PUMP
The GM-DELCO Heat Pump (not shown) is available as a self-contained or split system and provides both heating and cooling as required.

A COMPLETE LINE OF AIR CONDITIONING, HEAT PUMPS, FURNACES, BOILERS AND WATER HEATERS TO MEET ALL YOUR REQUIREMENTS.

GM Delco 365
CONDITIONAIR
DELCO APPLIANCE DIVISION, GENERAL MOTORS CORPORATION, ROCHESTER 1, N.Y.

From the Manufacturers

Service Bulletins

A problem familiar to the refrigeration industry is that of refrigerant condensing in the compressor crankcase and the absorption of the refrigerant in the oil. This causes severe slugging of the refrigerant-oil mixture as the pressure is rapidly reduced during startup. Frequently, compressor damage such as broken valves, damaged pistons, bearing failures due to serious loss of oil from the crankcase, bearing washout (refrigerant washing oil from bearings) is the result. In refrigeration systems this has been mainly a "cold weather problem" when the compressor was placed in an atmosphere having a temperature lower than that of the evaporator.

With remote type condensing units for air conditioning and heat pump applications this same condition exists even at relatively high ambient temperatures. With the increased use of this type equipment for residential air conditioning the problem has become serious. It has resulted in an excessive number of compressor failures, broken valves, blown gaskets, seized or worn bearings, broken rods, broken crankshafts, and broken lines. This condition is primarily beyond the control of the compressor manufacturer.

A well-designed, efficient compressor for refrigeration, air conditioning and heat pump duty is primarily a vapor pump designed to handle a reasonable quantity of liquid refrigerant and oil. To design and build a pump to handle more liquid would require a serious compromise in one or more of the following: size, weight, capacity, efficiency, and noise, not to mention the all important factor, cost.

Regardless of design, there are limits to the amount of liquid a compressor can handle, and these limits depend on factors such as internal volume of the crankcase, total oil charge, amount of oil remaining in the crankcase, type of system and controls, and normal operating conditions (such as operating temperatures, and ambient temperatures).

Where trouble due to refrigerant migration is likely to occur it is most important to hold the refrigerant charge as low as reasonably possible by:

1. Using the smallest practical size tubing in the condensers, evaporators, and connecting lines and circuiting the entire system to maintain the highest refrigerant velocity possible without encountering excessive pressure drop. Receivers also should be kept reasonably small.

2. Not overcharging the system. Charge with the minimum amount of refrigerant for proper operation and very little if any more. Beware of bubbles showing in the sight glass caused by small liquid lines and low differential pressures. This leads to serious overcharging, with resulting refrigerant migration, slugging, and compressor damage, especially on heat pump systems.

Excessive oil in a system will increase the slugging hazard and will reduce its refrigerating capacity. *Keep the oil level at the center of the sight glass.*

An oil separator is advantageous by trapping a large portion of the oil pumped out of the crankcase and returning it directly to the crankcase thereby preventing bearing damage which might occur if the oil should be in the condenser, receiver, evaporator, and connecting lines for any long period of time.

It is desirable to use a pump down system where practical. This is highly recommended and preferred to other methods. If a pump down system is not used a crankcase heater probably will be required and is highly recommended, but will not always be sufficient to eliminate slugging. *A crankcase heater is recommended on all heat pump systems regardless of the amount of refrigerant charge,* but it may not be necessary on self-contained, well controlled air conditioning and/or heat pump systems having small refrigerant charges.

Whether or not a crankcase heater or pump down system should be applied depends on many factors. The chart (shown above) may be used as a general guide, but the final decision must be based on actual test of the system.

COPELAND REFRIGERATION

Motor-Compressor Model	"A" Crankcase Heater Required If R-22 Charge Exceeds	"B" Pump Down Required If R-22 Charge Exceeds
2 U	4#	12#
9R1-8RO-8R28	6#	17#
LRH-LRG	10#	25#
LR40-LR46	10#	25#
NR40-NR46	10#	25#
4U-MRG-MR50	15#	30#
9R8-9R9	17½#	35#
4R48	23#	40#
6R48	28#	50#

Recommendations for remote type air conditioning systems where the compressor might at times be in an atmosphere colder than the evaporator:

1. Systems containing charges below the amounts shown in Column "A" may not require a crankcase heater or pump down cycle.

2. Systems containing charges greater than shown in Column "A" and less than those in Column "B" *should* have either a crankcase heater or pump down cycle.

3. Systems having charges greater than shown in Column "B" we believe should be operated on a pump down cycle to insure freedom from damage due to refrigerant migration.

REFRIGERANT-22: HERO or VILLAIN?, the popular 4-week series discussing the advantages and disadvantages of R-22, is now available in reprint form. Single copy, 25 cents; 10-49 copies, 20 cents; over 50 copies, 15 cents.

"Here's why I standardized on H&M cooling towers

...they're the only towers with a 20-Year Guarantee on the wetted deck surface!

"In my town, most air conditioning and refrigeration buyers prefer cooling towers for their installations. But local water conditions are pretty hard on the fill. Fungus and algae grow fast and furious—so fast that the accumulation actually blocks air flow and cuts tower capacity!

"After trying several makes, I standardized on H&M Cooling Towers. *The wood fill is specially treated with creosote applied under pressure,* and water plants and animals can't live on that! That's why the Halstead & Mitchell towers carry a 20-Year Guarantee on the wetted deck against failure due to fungus attack or rotting."

If you want towers that will last, and need a minimum of care, you should find out about H&M towers. Call your local parts wholesaler or write for Bulletin EC-500 (Propeller Fan Towers, 3 to 150 tons) or Bulletin ECKB-601 (Centrifugal Fan Towers, 5 to 30 tons). Halstead & Mitchell Co., Dept. H-72 Bessemer Building, Pittsburgh 22, Pa.

HM

Halstead & Mitchell

Cooling Towers • Air-Cooled Condensers • Air Handlers and Coils • Water-Cooled Condensers

Export Representatives: Sobel-Kielmann, Inc., 15 William St., New York 5, N. Y.

VIRGINIA Chemicals®

REFRIGERATION BULLETIN

"Helpful facts for the serviceman"

TIPS ON CLEANING TOWERS AND EVAPORATIVE CONDENSERS

Costly emergency repairs during a busy season can be prevented by proper application of water chemicals at startup and shutdown time. There are just two basic steps to follow. First, remove all dirt, scale and algae; second, retard corrosion and recurrence of scale with "Virginia" Corrosion Inhibitor. Follow a specific program to prolong equipment life and maintain maximum operating efficiency.

Cleaning Procedure

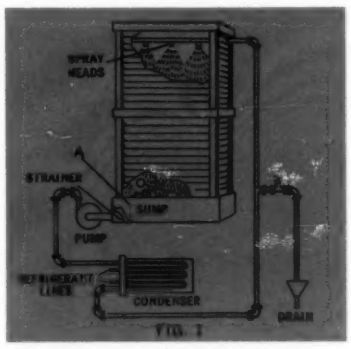


FIG. 1

① Drain and flush out loose dirt from sump. This consumes and wastes cleaner. *This is important.*

② Close bleed and refill with fresh water.

③ Estimate gallons of water in the system. Then add first dosage of solid or liquid scale remover as follows:

"Virginia" Scale Remover—Solid . . . 5 lb. per 10 gal. water
"Virginia" Scale Remover—Liquid . . . 1 gal. per 15 gal. water

In natural draft cooling towers and in evaporative condensers, the chemical can be added at the sump (as in Figs. 1 & 2). In forced draft towers it can be added at the tower distribution plate, tank or sump.

④ Operate system as usual. Check the scale remover solution strength in the sump every 10-15 min. with test papers. If paper does not turn *red* when immersed, add more cleaner until it does. Lowered head pressure will indicate when unit is clean—or simply inspect the tubes of the evaporative condenser. Inspecting the water outlet pipe of shell and tube condensers will tell you the scale condition of this type of unit.

⑤ After scale removal, drain the solution into the sewer (do not, for example, dispose of it on a lawn, as the strong salts can damage vegetation). Rinse out system thoroughly with at least two fillings of fresh water.

⑥ When using liquid scale remover on tower condenser systems, add the liquid near the pump intake for best results. Add 1 gal. at 5-min. intervals until the test paper turns red when immersed in sump water. When sump water has tested red for 20 minutes without addition of more cleaner, most of the system scale has been removed. Lowered head pressure will provide additional assurance of its clean condition. Then clean and rinse as indicated in Step 5. There may be small, thin patches of scale in isolated spots, but this will not prevent proper operation of the unit.

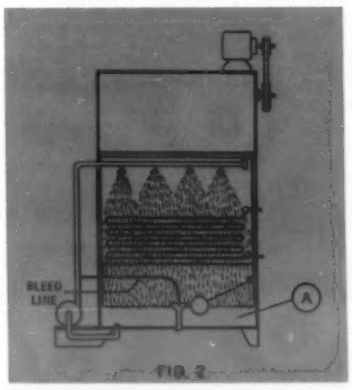
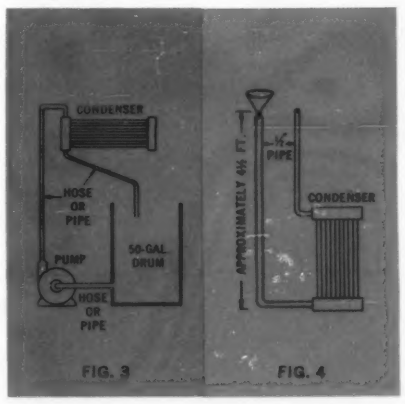


FIG. 2

NOTE: Do not add solid scale remover in a concentration of more than 10 lb. per 10 gal. of water. If more is needed, drain out the spent solution and add cleaner to fresh water. "Virginia" *Liquid* Scale Remover may be used efficiently at all concentrations.

How to clean coil condenser shell and tube

Isolate the condenser from the cooling tower by valves or by actually disconnecting its piping. Prepare a strong cleaner solution in a large plastic pail or wooden tub. Dissolve 5 lb. of solid scale remover in 10 gal. of water—or add 1 gal. of liquid cleaner to 15 gal. of water. Circulate this solution through the scaled condenser by using a pump, as in Fig. 3. To clean moderately scaled units, this should take about one hour. Test the solution regularly with test papers, adding more cleaner as needed. After cleaning, empty and flush the condenser at least twice and then replace it in the system.



A passage way for the cleaner can sometimes be opened up through condensers completely clogged with scale by using a standpipe as shown in Fig. 4. Mix liquid cleaner and water in equal proportions to fill the two vertical pipes to a level slightly above the condenser. Foaming will result from the cleaner action on the scale. So protect surrounding objects from being injured by covering the immediate area with a drop cloth or newspapers. When cleaning is complete, drain the spent solution into the sewer and rinse the condenser at least twice with fresh water.

After starting the cooling system up again, add proper dosage of "Virginia" Scale and Corrosion Inhibitor to the sump.

See back page for full line of refrigeration products

FOR TROUBLE-FREE MAINTENANCE USE "VIRGINIA" REFRIGERATION PRODUCTS

"Virginia" Scale & Corrosion Inhibitor
Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.

"Virginia" Liquid Scale Remover
Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.

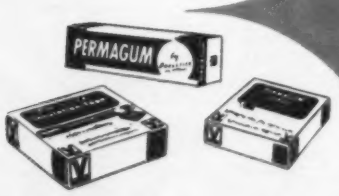
"Virginia" Solid Scale Remover
Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.

"Virginia" Algae-Cides
Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.

Du Pont FREON* Refrigerants
Nonflammable, nontoxic, stable, odorless
Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,* F-12,* F-13,* F-22,* F-113* and F-114* are available in cylinders of all popular sizes.

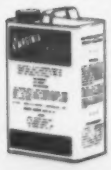
**Du Pont registered trade mark*

"Virginia" Ice Machine Cleaner
Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



Presstite Insulation
Tape—ideal for stopping pipe drip. Adheres to any dry surface. *Permagum slugs*—seals seams, copper tube, BX and conduit entries against moisture. *Cords*—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.

VascoCel Insulation
Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in ⅜", ½" and ¾" wall thickness.



"Virginia" Degreasing Solvent
No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts.
Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.

"Suniso" Refrigeration Oils
G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.

Can-O-Gas® Packaged Refrigerants
Throwaway cans—full line in screw-top or clip-top cans. Wide variety of preweighed charges, accurate to ±4 grams. Selection of Freon* gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va.
Available in Canada and many other countries
"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.

D77 Form 523

Printed in U.S.A.

I-B-R Resear

Valance
Does Not

DETROIT — Whi
system with finned-t
ceiling level on o
has been demonstr
one of the most eff
hydronic cooling s
same cannot be sai
formance during
when hot instead
water is being ci
heating purposes.

Warren S. Harr
professor, Departm
chanical Engineerin
ty of Illinois, so rep
79th annual conven
National Associatio
ing Contractors her

Prof. Harris, who

12
ar
M
U

That's th
mercial
expand
more th
turing a
and fully
of quali

ADDISO

THERE'S REAL PROFI
between the highly
industrial installatio
multiples for higher
them sold • Durable,
get business for you,
ALSO: HEAT PUM

MA
Som
call

A
PRODU

ADDISON, M

I-B-R Research Head Says :

Valance System's Performance In Heating Does Not Match Its Cooling Efficiency

DETROIT — While a valance system with finned-tube units at ceiling level on outside walls has been demonstrated to be one of the most effective of all hydronic cooling systems, the same cannot be said of its performance during the winter when hot instead of chilled water is being circulated for heating purposes.

Warren S. Harris, research professor, Department of Mechanical Engineering, University of Illinois, so reported at the 79th annual convention of the National Association of Plumbing Contractors here.

Prof. Harris, who directs the I-B-R research program at the University of Illinois, said that as far as cooling is concerned, a valance system's performance characteristics are admirable in every way.

Air circulation, by gravity, is steady and uniform. Control of temperature and humidity is good. Air motion is not noticeable. The system is neat, clean, and harmonizes inconspicuously with room decor.

When operated for heating in the fall and winter months, a valance system is akin in operating characteristics to a heating panel, Prof. Harris said. However, unlike a baseboard system, a valance heating system with heat coming from above rather than below is unable to control drafts in rooms with picture windows where the exposed glass area makes for conditions of unusual cold on an outside wall.

Combination systems that cool in the summer and heat in the winter are always out of balance for one season or the other, Prof. Harris explained, because there is no fixed relationship between heating and cooling loads that would make such systems mutually compatible for the two indoor comfort requirements.

The solution, he said, would seem to be to supplement a valance system for heating with the installation of sufficient baseboard units to control drafts.

Studies of a valance heating system augmented in this manner for better performance characteristics will be conducted at the University of Illinois next fall, Prof. Harris indicated.

In response to a question from the floor, he indicated that researchers had found no fixed relation between the radiation surface needed for heating and for cooling.

He further reported that the research laboratory was also making a study of infiltration rates to determine their effect on the sizing of heating systems.

"While infiltration may seem to be a function of building design rather than heating, heating systems are blamed for being inadequate when the trouble really lies with the infiltration rate."

In conclusion, Prof. Harris pointed out that the weak link in the chain connecting research, contractor, and public is the lack of information to the public on lastest developments in the field.

"They don't know the advantages of hydronic heating, cooling, and snow melting. It is up to the contractor to tell them the merits of the goods and services he has to offer," Prof. Harris declared.

Boiler Mfr. Offers Guarantee Against 'Thermal Shock'

PHOENIXVILLE, Pa.—Russell E. Emrich, Sr., president, Boiler Engineering & Supply Co., Inc., here, has announced a three-year manufacturer's guarantee against hot water boiler damage from so-called "thermal shock."

The guarantee applies to the company's Continental automatic packaged boilers used for industrial, institutional, and commercial applications.

It means, the announcement said, that boiler owners and specifying engineers are protected against loss from structural failures of boiler pressure vessel usually attributed to flow rate or temperature differences of return water.

"During a three-year term this guarantee makes provision not only for repair of equipment, but under certain conditions, partial or complete replacement of the boiler," Emrich said.

Jackson & Church Names Distributors In 5 States

YORK, Pa.—New distribution outlets in Virginia, Alabama, Maryland, Illinois, and New York have been signed recently by Jackson & Church Div., York-Shipley, Inc.

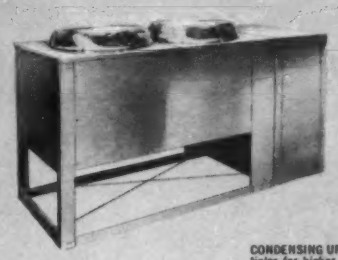
A spokesman for the company said a new specialty type distributor, one who calls on architects and engineers, as well as dealers, has been sought out to sell this line of large warm air heating equipment. Sizes range from 90,000 to 5,000,000 Btu in the Jackson & Church equipment line which makes for a natural tie-in with the specialty distributors, it was stated.

Distributors added since Jan. 1 are Automatic Equipment Sales of Virginia with offices in Richmond, Norfolk, and Roanoke, Va., and Salisbury, Md.; Shook & Fletcher, Birmingham, Ala.; Midwesco, Chicago; and Carleton-Stuart, New York City.

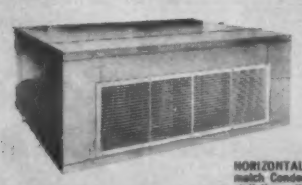
12 YEARS and over a MILLION UNITS

That's the experience behind Addison's Commercial Line. Since 1949 our facilities have expanded each year to where we now have more than 200,000 square feet of manufacturing area. Addison's know how, experience and fully equipped plants are your assurance of quality products.

ADDISON AIR CONDITIONERS



CONDENSING UNITS—7½ to 20 h.p., multiples for higher ratings • Rugged • Quiet • Weatherproofed • Diagonal coil for minimum plan area • Controls wired and enclosed • Compressor section may be detached • Designed for outdoors.



HORIZONTAL AIR HANDLERS—Sizes to match Condensing Units • For remote installation with ducts or with plenum and 4-way grille as optional extra • Large coil face area for low air velocity and sound level.

THERE'S REAL PROFIT FOR YOU BECAUSE: Addison Commercial Units are between the highly competitive residential market and the big, complex industrial installations. Easy to install • Flexible to meet any conditions—multiples for higher ratings • Quality features to sell customers and keep them sold • Durable, trouble free construction • A price structure that will get business for you, and at a profit.

ALSO: HEAT PUMPS • WATER CHILLERS • ROOF TOP UNITS

MANUFACTURERS REPRESENTATIVES
Some territories still open. Write or call Commercial Division for details.

ADDISON
PRODUCTS COMPANY
101 RAILROAD STREET
ADDISON, MICHIGAN • PHONE LI 7-1200

NOW AVAILABLE FROM SPRAGUE!

THE MOST COMPLETE CATALOG FOR AIR-CONDITIONING, REFRIGERATION, MOTOR SERVICING

SPRAGUE CATALOG C-914

Twenty pages filled with useful information on capacitor-start and capacitor-run motors, valuable data on capacitor rating selection, complete listings of Sprague AC Capacitors, and a comprehensive Interchangeability Guide for Motor-Starting Capacitors including Sprague and ten other manufacturers.

Write for your FREE copy today!

SPRAGUE MODEL M-2 MIKE-O-METER®

A capacitor tester designed specifically for motor service technicians. This handy little instrument weighs only 6 lbs.—it goes where you go! A twist of a dial tells you whether capacitors are good or bad, measuring capacitance and power factor by the accurate Wien Bridge method.

Built for rugged service, the components inside the sturdy steel case are especially chosen for long, dependable life. Complete with operating manual, the M-2 has a net price of only $32.50

Order yours NOW for the Summer Season!

Sprague Products Company
63 Marshall Street
North Adams, Mass.

SPRAGUE®
THE MARK OF RELIABILITY

World's Largest Capacitor Manufacturer

Lone Star Gas Had 5,170 Conditioners On Line at Year End

DALLAS—A total of 5,170 gas air conditioners with a combined tonnage of 85,941 was on the lines of Lone Star Gas Co. as of the end of 1960, according to W. A. Collins, Jr., utilization coordinator.

Collins gave the NEWS the following breakdown of these totals:

	No. Units	No. Tons
Residential	3,398	13,900
Commercial	1,697	12,449
Industrial	75	59,592
Total	**5,170**	**85,941**

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

F. C. Schulze

A. F. Sheller

Waukesha Promotes Schulze, Sheller

WAUKESHA, Wis. — F. C. Schulze has been advanced to vice president of sales for Waukesha Motor Co. and A. Foster Sheller has been named vice president of manufacturing, it was announced by C. E. Nelson, president.

Schulze has been general sales manager since 1949. Sheller was named manufacturing manager in 1959.

Schulze then announced the appointment of Robert A. D'Amour as manager of manufacturer sales and Roland R. Heideman as manager of distributor sales. D'Amour was formerly assistant sales manager. Heideman has been assistant manager of the company's California branch.

In a separate announcement, J. G. Swain, vice president, made known his retirement. Swain has served as an officer of the company since 1949 and as a member of the board of directors for the past 28 years. He will continue as a director of the firm.

Blue Law Exempts Service

RALEIGH, N. C.—Although aimed at Sunday sales of appliances, as well as other merchandise, the North Carolina Legislature has exempted Sunday repairs and "services" from a blue law which it has passed recently.

Montreal Urban Redevelopment To Get 6,000 Tons of Refrigerating Equipment

MONTREAL, Que., Can.—An order for 6,000 tons of refrigerating equipment for Place Ville Marie has been awarded to Carrier Air Conditioning Co. (Canada) Ltd., according to an announcement by Edward F. Pope, president.

He said the contract also calls for a large number of under-window air conditioning units in the 42-story The Royal Bank of Canada building, the most prominent of four new structures which will comprise the major urban redevelopment center now under construction in the heart of Montreal.

Each of the three electrically-driven refrigerating machines to be supplied under Phase I of the building program will have a cooling capacity of 2,000 tons.

The contract was awarded to Carrier by the John Colford Contracting Co. Ltd., and Kerby Saunders (Canada) Ltd., joint mechanical contractors for the project.

Due to a high ratio of peripheral to interior areas in The Royal Bank of Canada building, it will require 8,320 high velocity induction units to control room temperature and humidity in the various offices.

"This tops by more than 1,000 the number of units installed in the 60-story Chase Manhattan Bank building in New York's financial district," the announcement said.

"Enclosures for the Carrier Weathermaster units will form a low shelf around the periphery of each of the 40 floors in the tower. Each floor will cover about one acre and the total building area will be 1,536,000 sq ft, making it the largest office building in the British Commonwealth when it is completed sometime in the spring of 1962."

In the system designed by Jas. Keith & Associates of Montreal, associated with Cosentini Associates, of New York, both consulting mechanical engineers, units in shaded offices will provide heating while units in sunlit offices simultaneously provide cooling.

Pope said the individually-controlled units will use air and water to maintain desired indoor temperature levels regardless of changing outdoor conditions.

Place Ville Marie also will include the 3-story Cathcart St. office building with a gross area of 190,000 sq ft. In the future, the 13-story Mansfield office building and a shopping promenade will be built.

Underground parking for 1,000 cars and a landscaped plaza complete the essential elements for the 7½-acre commercial tract designed by I. M. Pei & Associates, achitect and planner associated with Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud & Sise for Webb & Knapp (Canada) Ltd.

The Foundation Co. of Canada Ltd. is the general contractor.

Crowe Is Cleveland District Sales Mgr. For Wolverine Tube

ALLEN PARK, Mich. — Robert C. Crowe has been appointed Cleveland district sales manager for Wolverine Tube, division of Calumet & Hecla, Inc., the company announced recently.

Crowe, in turn, announced the appointment of J. A. Finnerty as sales representative in Dayton.

Crowe joined the company in 1950, serving most recently as manager of product sales in Allen Park.

Finnerty was formerly a sales representative in the Detroit area. His responsibility area will include the western half of Ohio and the eastern half of Indiana.

dependable

TWO POLE

switching

Ranco Double Pole, Single Throw "O" Type Commercial Controls, designed for a variety of two pole switching jobs, provide additional general and special applications in commercial air conditioning and refrigeration.

Single and dual unit types in series 6000 and 7000 provide a double break for single-phase operation, simultaneous switching of two circuits, or switching two lines of a three-phase circuit.

Features generally duplicate those on single pole series for low-pressure, high-pressure, dual-pressure and dual-temperature operation. Variations include fixed and adjustable differentials, operation on rise or drop in pressure or temperature, with or without manual reset, cut-out and cut-in ranges, safety limit stop on high pressure range. Available from your local wholesaler.

3 Types in Each Series

TYPE 020—Single unit in low pressure or temperature. Contacts open on decrease. Automatic or manual reset. Manual start and on-off lever (on temperature).

TYPE 021—Single unit in high pressure or temperature. Contacts open on increase. Automatic on both, manual reset on pressure.

TYPE 022—Dual unit in combinations of high pressure with low pressure, or with temperature. Contacts open on increase of high pressure, decrease of low pressure or temperature. Automatic on all or manual reset on high and low pressure combination. Safety limit stop on high pressure.

Ranco INCORPORATED
COLUMBUS 1, OHIO
IN CANADA: RANCO CONTROLS, CANADA, LTD., TORONTO 18, ONTARIO

Consider Changes In Fuel Oil Standards, Specifications; Burner Mfr. Cites Benefits

WASHINGTON, D. C. — An important change affecting fuel oil standards and specifications of No. 2 oil is now under serious consideration, Richard C. Wright, vice president-engineering for Iron Fireman Mfg. Co., told the National Oil Fuel Institute convention here.

Weighing this change, Wright said, is Technical Committee E, Section D-2 of the American Society for Testing Materials. The committee involves the fuel oils group, petroleum products section, of the ASTM.

The change, Wright noted, would alter the minimum A.P.I. gravity from 26 to 30—except for certain Pacific Coast states, where the minimum would be 28.

"For many years much research has been conducted in burning characteristics of light distillate fuels in an effort to establish a good index of burning qualities," he said.

"To date, of all the measurable properties, A.P.I. gravity appears to be the best indicator. Other factors, such as viscosity, carbon-hydrogen ratio, diesel index, and cetane index are indicative to a certain extent—but gravity appears to be the single index of greatest significance."

Wright, who is chairman of Technical Committee E, said that fuel oil uniformity will be a necessity if the oil heat industry is to realize the full potential of new and greatly improved burning systems.

Burner Readjustment Not Practical

"It is not practical," Wright pointed out, "to readjust the burner setting for each load of oil and it is not yet possible to provide automatic compensating devices, except at prohibitive costs."

The Iron Fireman executive noted that with even more uniform fuel, burner manufacturers like Iron Fireman could build better, less expensive burners that would also be easier to service.

"Probably the most practical solution for keeping up to date in light distillate fuels is to divide No. 2 into two grades—for example, a light grade at 33 to 37 A.P.I. and a heavy grade at 27 to 31 A.P.I.," Wright said. "Both would be of equal quality and price. The consumer could have his appliance adjusted for best performance with one and specify that grade."

No. 5 Oil Seen as Difficult Area, Too

Another difficult area, Wright continued, is No. 5 oil. "The present viscosity range for No. 5 is much too broad to make the standard specification of value without some sort of supplemental specification. Hence, there are a variety of local trade customs by such names as Light No. 5, Heavy No. 5, Cold No. 5 . . . , and so forth."

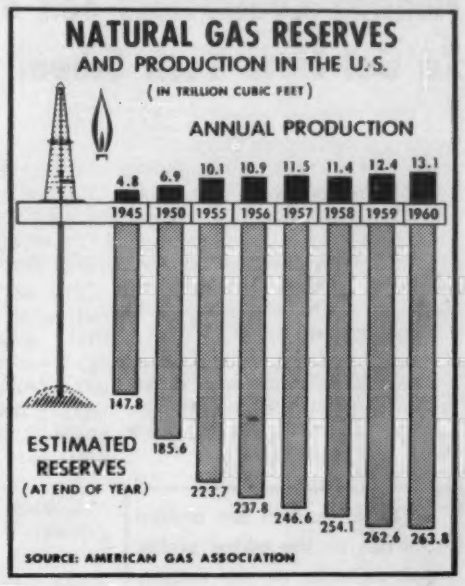
Wright observed that too many users of fuel oil unfortunately don't know they should define their needs more closely than by grade number alone. "Hence the reputation for smoke and soot production in our residual oil burning cities," he added.

"It is a sad situation," the Iron Fireman executive commented, "for such a great industry to stand by and let something like this happen. No. 5 is a very desirable fuel when properly handled, but it is being grossly abused."

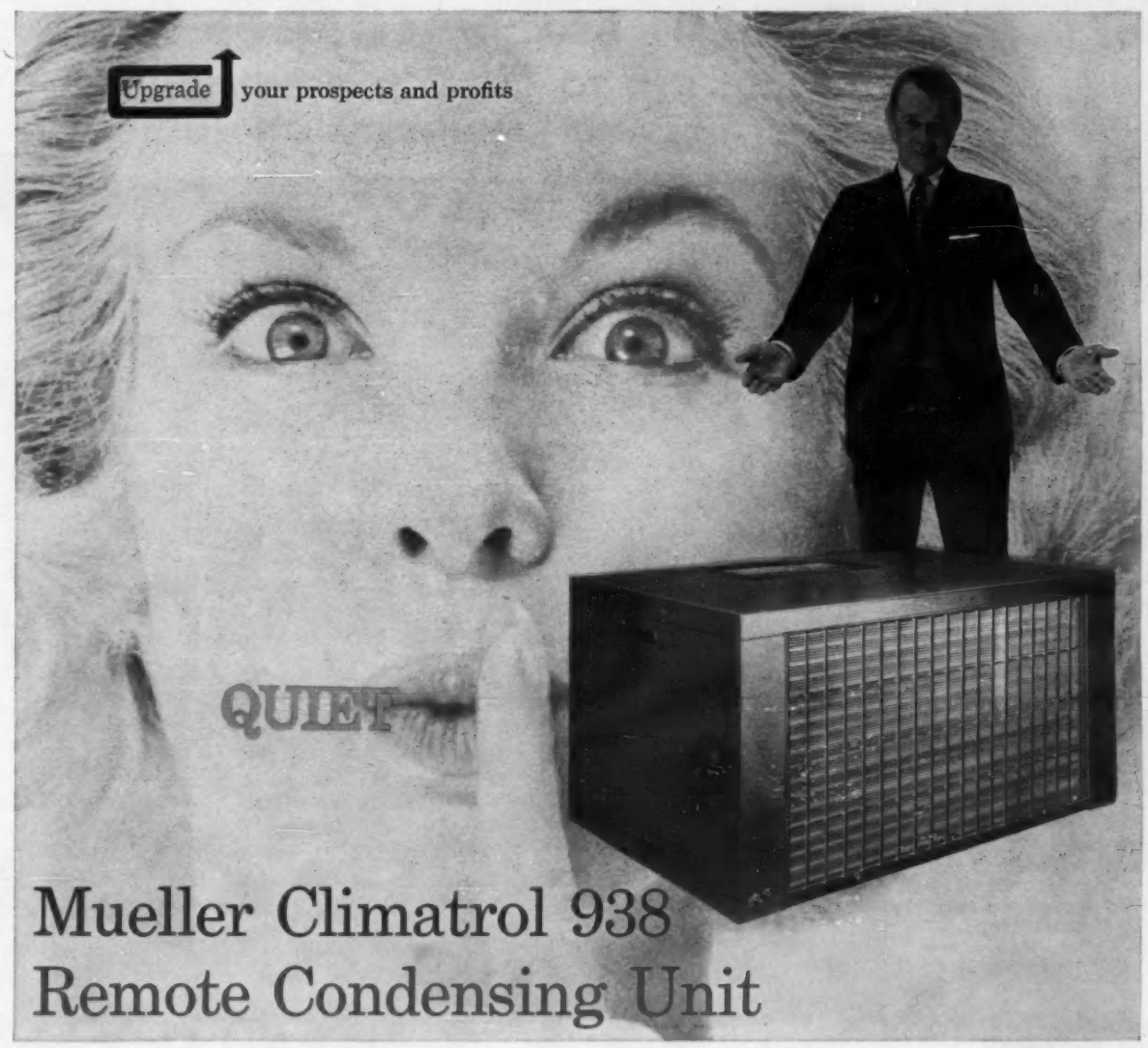
Commenting on the suggestion that the present No. 5 be split into two new grades, Wright said: "If this goes through, it will be a major improvement, but still not enough. Consumers and producers alike need to know more about the properties of these products."

Wright pointed out that the function of ASTM is not to be a policeman of the industry, nor specifically to upgrade quality. Its purpose, rather, is "the promotion of knowledge of the materials of engineering, and the standardization of specifications and methods of testing," Wright said.

"That is where standard specifications come into the picture," Wright concluded. "Not to tell how the product is to be made, but to provide a simple language with which buyers and sellers can communicate with each other."



NATURAL GAS reserves in the United States advanced to a new peak of 263.8 trillion cu ft at the start of 1961, according to the American Gas Assn. Since 1950, the nation's proved reserves of natural gas have gained more than 78 trillion cu ft. despite steadily increasing levels of production.



Mueller Climatrol 938
Remote Condensing Unit

Free yourself from The Profit Squeeze. Give your customer the choice of a top quality unit, too — this Model 938 air-cooled Remote Air Conditioner, for example. *Its value overshadows price* . . . gives your customer more quiet, more comfort and convenience, gives you more profit per sale.

MUCH MORE QUIET — Matched components for unmatched quiet and performance. (1) Reserve capacity centrifugal blower moves lots of air gently, quietly. (2) Slow air movement over the extra-size coil assures maximum cooling capacity and quiet. (3) The compressor rests on special Vibrasorber mounts, is not run at top theoretical capacity . . . sound is reduced even more. (4) Free air flow design cabinet never "pinches" air, contributes to amazing quiet.

ADVANCED DESIGN — Discharge at top directs air away from plants and neighbors. Top quality parts such as permanently lubricated ball bearings, rust-protected raised base, special outdoor finish inside and out give long, trouble free life. All working parts completely sealed from weather. Standardized parts, easy access simplify servicing.

Mueller Climatrol means quality
. . . and quality means profit!

Mueller Climatrol
DIVISION OF WORTHINGTON

U.L. and C.S.A. Approved A.R.I. Listed

MC-185

2025 West Oklahoma Ave., Milwaukee 1, Wis. • 1024 Westminster Ave., Alhambra, Calif. • 2490 Bloor St., West, Toronto 12, Ont.

Heating Contractors Tell of Pay-Offs To Get New York School Work OK'd

NEW YORK CITY — Two heating contractors informed a New York state investigating committee last week that they had paid New York City school inspectors and supervisors sums of money running into thousands of dollars to help get their work on city school jobs cleared and approved.

Their testimony was given at a hearing into alleged shakedowns of construction and maintenance contractors doing work on city schools.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Several investigations are currently going on here into charges of shoddy construction of school buildings and failure of education officials to make even emergency repairs to seriously damaged buildings.

The state investigating committee is looking into charges that school inspectors and supervisors accepted money and gifts from contractors and allegedly held up necessary clearances and approval of work until paid off.

According to a report in *The New York Times,* George Weber, general manager of Daniel J. Rice, Inc., heating and ventilating contractor, told the committee that his firm distributed between $1,500 and $2,000 at Christmas to school inspectors and supervisors.

He said that cash gifts of $20 or $30 had been given to 11 school employes. Two school supervisors had previously admitted getting $200 each from the Rice firm. "It is possible," Weber said, when questioned.

Two special agents of the committee, according to the *Times* report, testified that last Jan. 12 they had taken a statement from John Dierks, president of the Dierks Heating Co. They said Dierks had dictated and agreed to the statement but would not sign it.

In this statement, Dierks was reported to have said that school inspectors once a month would tell him to meet them and be prepared to pay $25 to $35. He reportedly said that he was then paying $50 a month to inspectors on two school jobs and that he paid $200 a month in '60 and $75 a month in '59.

Contractors, Architects, Engineers Solving Mutual Problems, NAPC Told

DETROIT—Definite progress in getting together to iron out mutual problem areas was acknowledged by both contractor and architect-engineer segments of the building industry during a panel discussion on plans and specifications staged at the recent convention of the National Association of Plumbing Contractors here.

NAPC was urged to follow through with the start already made in surveying contractor opinion on plans and specifications as they affect local bidding practices.

Specifically, architects and engineers on the panel strongly advocated that plumbing contractors take the initiative in presenting their complaints about escape clauses that appear to favor architects and owners in contract documents directly to the owners at the time contract negotiations are under consideration.

Members of the panel, moderated by Chairman F. A. Schmitz of the NAPC technical department, were J. H. Soehnlen, director of District 8, NAPC; J. Stewart Stein, member of the American Institute of Architects and former president of Construction Specifications Institute; Glenn F. Ballard, chairman of the national committee on improved construction practices, National Association of Credit Management; and Robert G. Burkhardt, vice president of the Chicago chapter of Construction Specifications Institute, consulting engineer, and member of the technical review board of CSI, Chicago.

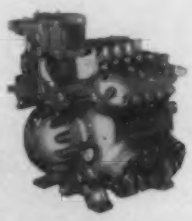
M-PAK MODULAR PACKAGES... A NEW ADDITION TO B&G® AIR CONDITIONING AND REFRIGERATION EQUIPMENT

A COMPLETE LINE OF REFRIGERATION AND AIR CONDITIONING COMPONENTS

B&G CONDENSERS
Lighter, more compact units, featuring quiet, vibration-free operation, uniform gas distribution, cleanable tubes and higher operating efficiencies.

B&G EVAPORATORS
Featuring non-slugging design...tube bundle proof against freeze-up damage ...positive oil return.

B&G SUCTION LINE HEAT EXCHANGERS
Aid thermal expansion valve operation, prevent liquid slugging.



B&G COMPRESSORS
Precisely engineered for vibration-free operation with all the advantages of "open" units. All units have *one* bore —a few interchangeable parts service them all.

B&G CENTRIFUGAL PUMPS
A full range of *quiet* pumps for refrigeration and air conditioning systems.

Modular packages increase availability...speed-up delivery

In its M-Pak Modular Packages, B&G presents a new advance in efficiency designing of air conditioning and refrigeration equipment. M-Pak units are built around five basic sizes of open-type compressors. Factory-stocked motors, condensers, evaporators and controls can be added to these basic units to make a comprehensive line of "packages" of from 7½ to 150 tons.

1. For example, motor compressors are produced by adding a B&G-built motor to a B&G basic compressor. **2.** Further addition of a B&G condenser and a standard base makes a condensing unit. **3.** Addition of evaporator and control panel results in a package liquid cooler.

All major components of M-Pak units are designed, manufactured, and guaranteed by B&G...*one* responsibility for the entire package. This, we believe, is an exclusive feature.

B&G also makes a complete line of refrigeration and air conditioning evaporators, condensers and centrifugal pumps—with many commonly used sizes available for immediate shipment from factory stock.

BELL & GOSSETT COMPANY
Dept. GS-47, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

Appoint Florida Distributor for New Chemicator

BURBANK, Calif.—Flarapco, Inc., has been appointed as exclusive Florida distributor for the new Chemicator, reports Frank Card, president of Chemicator, Inc., a division of Erlen Products Co.

Chemicator is a device for the automatic chemical treatment of water in cooling towers and evaporative condensers.

Flarapco offices, showrooms, and warehouses are located in Miami, Tampa, Jacksonville, and Orlando. All of Florida, with the exception of the extreme western portion, will be covered by Flarapco's sales staff and sub-distributors, according to L. R. Bickley, secretary-treasurer.

Chemicator will be made available to air conditioning and refrigeration contractors and also to military bases, governmental agencies, and chain stores who maintain their own equipment. Flarapco has appointed William Connelly and John Taxis, refrigeration engineers, to head the Chemicator phase of the organization.

Limbach Names Brandon Estimating Manager For Mechanical Dept.

PITTSBURGH — Frank W. Brandon has been named estimating manager of Limbach Co.'s mechanical department, it was announced here.

He formerly was special projects manager in the Pittsburgh mechanical division. Brandon will direct all estimation of plumbing, heating, air conditioning, and ventilating contracts in a three-state area.

The company also announced the appointment of Harold H. Hollingsworth as sheet metal superintendent and William S. Wilson Jr., as piping superintendent in the Pittsburgh branch.

Hollingsworth previously was with Standard Engineering Co., Washington, D. C. From 1947 to 1960 Wilson was with Wayne Crouse, Inc.

follow Scovill's suggested 5 point program

for pride in your installations and service to your customer.

SPECIFY AND INSIST UPON BRANDED U.S.-PRODUCED MATERIALS.

★

INSTALL ONLY SERVICE-PROVED MATERIALS USING TIME-TESTED METHODS.

★

DEMAND CLEAR IDENTIFICATION OF ALL MATERIALS IN ACCORDANCE WITH U.S. INDUSTRY STANDARDS AND CODES.

★

SPECIFY BRANDS YOU KNOW AND RESPECT . . . MADE BY U.S. CRAFTSMEN.

★

BUY FROM YOUR NEIGHBOR-WHOLESALER WHO IS PLEDGED TO GIVE YOU RESPONSIBLE, CONTINUING SERVICE.

★

MADE IN USA

and made better to bring out the BEST in every installation

THERE'S NO FINER ***quality control*** THAN THAT WHICH SAFEGUARDS

SCOVILL ®

copper refrigeration tube

COPPER WATER TUBE K-L-M

COPPER THREADLESS PIPE (TP)

RED BRASS PIPE

COPPER PIPE

COPPER DRAINAGE TUBE (DWV)

PLUMBERS BRASS GOODS

SCOVILL MANUFACTURING COMPANY • COPPER TUBE MILL PRODUCTS, WATERBURY 20, CONN.

10SC60

here,

there . . .

almost everywhere

Members of the specially trained, 70-man field auditing staff of the Audit Bureau of Circulations* make regular calls on 2,900 publications . . . ours included . . . located in almost as many places.

The ABC auditor's call might last a day, a week, or even several months . . . just as long as it takes him to make a complete audit of our circulation records and obtain the information about our circulation audience that ABC will later publish.

Actually, he is working for you — our readers and our advertisers. Knowing full well that we will stay in business only so long as our publication continues to serve the interests of our readers, this audit of our *paid* circulation provides us with a regular and objective review of how well you think we are doing.

Knowing full well that sales messages must reach a responsive audience in order to be effective, our advertisers are also interested in the ABC auditor's call. The hard, and sometimes cold, facts he reports about our circulation provide you with an informed basis for investing your advertising money.

Yes, the ABC auditor has been here . . . and he will be here again, calling to check on how well we are doing our job and to provide the facts to help us *and our advertisers* do even better.

AIR CONDITIONING HEATING & REFRIGERATION NEWS

450 WEST FORT ST. DETROIT 26, MICH.

* This publication is a member of the Audit Bureau of Circulations, an association of nearly 4,000 publishers, advertisers, and advertising agencies. Our circulation is audited by experienced ABC field auditors. Our ABC report shows how much circulation we have, where it goes, how obtained, and other facts that tell you what you get for your advertising money when you use this publication.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

eral manager, Birdie Tebbetts, thought he had the wages-hours-and-benefits bit all settled. Up popped an unexpected final demand.

"Will you treat us," asked the union committee spokesman, "to today's ballgame?"

Happy ending. Birdie could, would, and did. Milwaukee beer on the house, too.

Why He Is a Legend

On a visit to the Hillerich and Bradley baseball bat factory in Louisville, elder statesman Ted Williams was shown a rack of 31-in., 36-oz models.

"Our precision manufacturing methods," boasted an official, "guarantee that every one of those bats is identical in size and weights."

Williams idly lifted out two or three, and rejected one.

"This is too heavy," he alleged.

They weighed it, and it was—by three fourths of an ounce.

Newspaper of the Jackson, Mich., state prison—following four straight losses of its inmate baseball team—commented:

"At least we won't lose any road games."

Who's Boss Around Here?

The year 1960 was without precedent for wacky managerial incidents. Consider:

1. Eddie Sawyer resigned as manager of the Phillies after their first game.

2. Lou Boudreau, radio broadcaster for Cubs games, was hired to replace Charlie Grimm, manager of the Cubs. Half an hour later Grimm had Boudreau's former job.

3. By telephone, manager Jimmy Dykes of the Tigers was swapped for likewise Joe Gordon of the Indians, even-steven.

4. After winning another American League pennant (and achieving an all-time record by so doing) manager Casey Stengel of the Yankees was fired. "Too old," explained ageing owners of the Yanks.

5. The *Cubs* wound up without any manager. Owner Phil Wrigley announced that nine coaches and an IBM machine would call signals.

Sex vs. Sports (or vice versa?)

The late Jack Onslow managed a lad in the minors who had glove troubles. He couldn't field a ground ball with a basket.

One night the kid whanged out a bases-loaded homer in the ninth, and fans flang him half a bushel of coins.

"Bucko," advised Jack, "go out and buy yourself the best fielder's mitt in the store with some of that money."

Two nights later Bucko showed up in a raucous new sports jacket, but with the same old tattered glove.

"What do you expect to catch in that sports jacket?" glowered Onslow.

"You'd be surprised what I snatched with it awreddy," leered the skirt chaser.

Boy's answer to a question in an anatomy quiz:

"Legs is what if you ain't got two pretty ones, you can't get to first base, and neither can your sister."

At Fort Knox, Ky., where he was serving his Army hitch, Bill Stafford (rookie pitcher in the New York Yankees stable) was interviewed by a newsman.

"Private Stafford," edged the reporter, "how long do you think it will take you to make the rank of Sergeant?"

"I hain't," he hainted, "aimin' to find out. I got me a girl back home."

The Family Angle

Mark Beltaire reports the following conversation in the men's room at Tiger Stadium between a father and his small son.

"Hurry up, Tony, we're missing the excitement."

"I can't, father. You put my shorts on backwards."

Ageless Early Wynn was first to break this Cliche Barrier: "He wouldn't give his mother a good pitch."

"Mother," relates Wynn, "was a helluva good hitter."

Scintillating second-baseman "Red" Schoendienst wedded Mary O'Reilly of St. Louis. That explains why their four children bear these improbable names:

Colleen Schoendienst, Kathleen Schoendienst, Eileen Schoendienst, and Kevin Schoendienst.

Upon encountering this family phenomenon, Cardinal Spellman (the Catholic Cardinal, not the St. Louis baseball variety) observed:

"The Germans lost another battle."

There Were Giants In Those Days

As usual, the American League flag-raised its 1937 pennant chase in Washington, D. C.

On hand to watch the Senators and Yankees was Franklin Delano Roosevelt himself. On the mound for Washington was Bobo Newsome, an almost equally celebrated Living Legend.

Third baseman Ossie Bluege fielded a bunt, threw hastily to first—and the ball smashed into Newsome's jaw. It knocked him silly, of course, but he refused to leave the game.

"The President of the United States came out to see old Bobo pitch," he thick-lipped, "and I ain't a-goin' to disappoint him."

Accident occurred in the third inning. Newsome went on to hurl a 1-0 shutout. With a fractured jaw. FDR stuck it out, too.

In that same year, after striking out twice, Vince DiMaggio came up for a third time. Diz Dean fired two strikes past him, then Vince popped up.

"Let it drop, let it drop," yelled the Great Dean—and his surprised catcher did.

Manager Frisch stormed out of the dugout.

"Aw, Frankie, lemme alone," Dean apologized. "I gotta bet I fan DiMag three times today, and I don't wanna spoil it."

Next pitch, strike three.

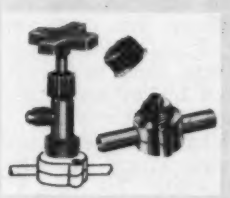
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

HENRY VALVE CO.
CONTROLLING FLOW SINCE 1914

TIME SAVERS FOR SERVICE CALLS

Henry "on-the-job" accessories are designed to speed up servicing operations and make possible more profitable calls per day. They are considered standard equipment for refrigeration and air conditioning service.

"GOLD SEAL" SWIVEL CONTROL and LINE TAP VALVES
To Charge, Test or Purge Sealed Systems. Triple-Sealed, Tamper-Proof Valves. Tube Sizes, 3/16" thru 5/8" OD.

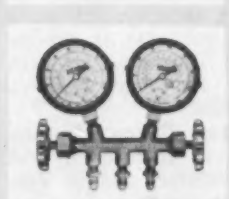


ADJUSTABLE LINE TAP VALVES
One-piece Needle and and Stem. Top Access Three-Screw-Clamp. Two Valves—six tube sizes, 3/16" thru 5/8" OD.

TERMINAL SEALS for hermetic units
Stop Terminal Leaks Instantly Without Opening the Compressor. No Special Tools Required.

FLEXIBLE REFRIGERANT HOSES
Featuring Retained Seal Gasket in 1/4" SAE Quick Coupler. Maximum Working Pressure 500 PSI.

CHARGING & TESTING MANIFOLD
Teflon Valve Seat and Packing. Minimum Torque Required. No Wrench.



Write for Henry Accessory Catalog No. 104AC

HENRY VALVE COMPANY
Flow Control Devices and Accessories for Refrigeration, Air Conditioning and Industrial Applications
MELROSE PARK, ILLINOIS, U.S.A. CABLE: HEVALCO, MELROSE PARK, ILL.

St. Lawrence Dam Heat Pump Does Job Where Heating Load Doubles Cooling

CORNWALL, Ont., Can. — A large heat pump system, which cools and heats the six-story administration building at the Canadian end of the principal St. Lawrence Power Project Dam two miles west of here, has now performerd satisfactorily through three full heating seasons and has maintained design indoor temperatures when outdoor temperature was as low as -28°F.

The 500-ton system differs from most heat pump systems in that the heating load is almost double the cooling load. Yet it does the job without supplementary heat.

COP Never Below 4

Coefficient of performance never drops below 4 and reaches as high as 4.82 at 40% full system load.

Reason, of course, is the unlimited supply of river water for heat exchange. The heat pump derives its winter heat from water used to cool the powerhouse generators. In summer, it transfers building heat to the St. Lawrence river.

The power plant spans the channel between the eastern end of Barnhart Island on the United States side and a point on the Canadian shore some two miles west of Cornwall. Overall length of the powerhouse facilities is 3,300 ft.

The power plant is housed in one continuous structure that is actually two separate and independent plants. The structure is bisected by the international boundary, with each half built and operated by its respective agency (Power Authority of the State of New York and the Hydro Electric Power Commission of Ontario).

Each power authority has 16 generators which have a combined maximum capacity of 1,880,000 kw, second only to that of Grand Coulee dam on the Columbia river in the state of Washington.

Powerhouse administration buildings on both ends of the dam structure are air conditioned by Trane equipment. This article will discuss only the heat pump system in the Robert H. Saunders building on the Canadian side.

No Boiler Plant Needed

Dual-purpose refrigeration equipment has been installed in the Robert H. Saunders administration building for both heating and cooling. First cost was reduced by eliminating the need for a boiler plant.

In addition, an estimated annual saving in operating costs of up to $8,000, over an electric resistance system that had been considered for heating, was made possible.

Two 250-hp Trane hermetic "CenTraVacs" operate as heat pumps in winter, and as centrifugal water chillers for summer cooling.

In selecting the CenTraVacs' size, the coefficient of performance was the determining factor for operating economics. The installation maintains a minimum of 4.0, and during most of the heating season averages between 4.5 and 4.6. Each machine is capable of automatic capacity control, without cycling, down to 10% of its full load capacity.

Sharing Load Eliminates Surging

Careful machine selection and system control design have eliminated one of the problems that may be encountered with centrifugal water chillers, particularly in heat pump systems —that of surging under partial load conditions where the control requires relatively high condensing temperatures.

The experience of 2½ years' operation has proven the soundness of basic engineering.

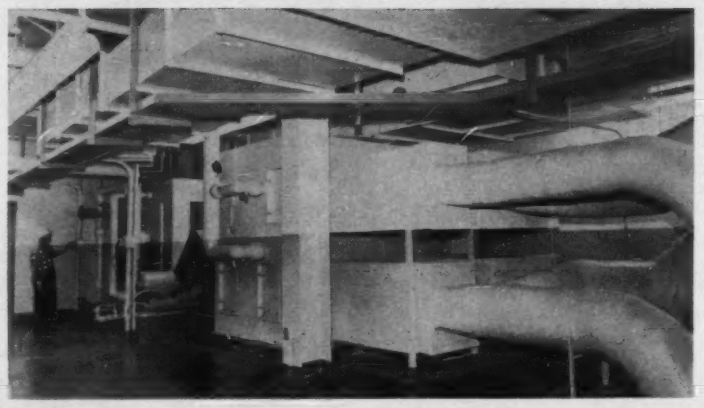
When both CenTraVacs are operating on the heating cycle they are controlled to share the load equally.

An alternate method would be to keep one machine fully loaded and cut back the other machine to follow the load changes.

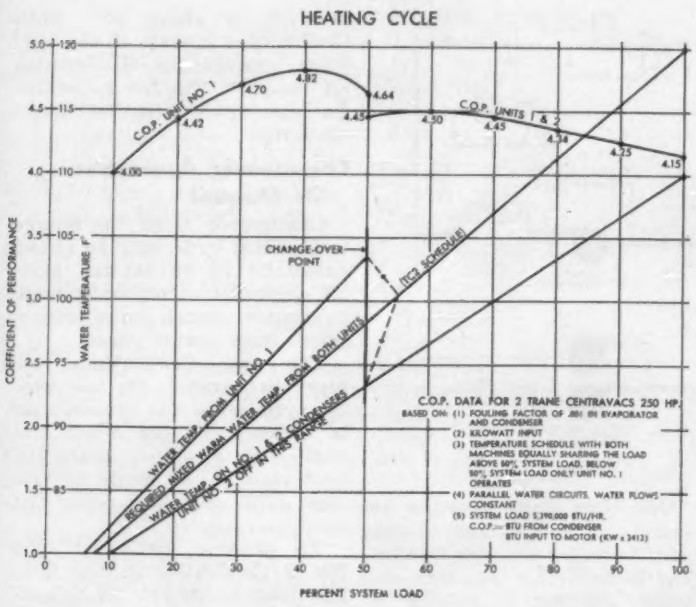
But with this latter arrangement there is a danger that the partially loaded machine will surge, so this control method was discarded in favor of one where each machine shares the load equally.

This occurs between 50% and 100% of full system load. When the load drops below 50% of full system load, one machine is dropped out and the remaining machine immediately picks up the load and operates at full load.

If the system load should continue to fall off due to rise in outdoor temperature, the operating machine will have its capacity throttled automatically, to follow the demand, down to



AIR HANDLING in the St. Lawrence Seaway heat pump system is accomplished by high pressure air conditioning units. They consist of a draw-through sprayed coil section, cooling section, a Trane Class III fan with inlet boxes, and a hot and cold deck reheat section with radius outlets. Conditioned air is delivered into various rooms through blender units.


HEATING CYCLE
COEFFICIENT OF PERFORMANCE
WATER TEMPERATURE F.
PERCENT SYSTEM LOAD
C.O.P. UNIT NO. 1
C.O.P. UNITS 1 & 2
4.42
4.70
4.82
4.64
4.45
4.50
4.45
4.34
4.25
4.15
4.00
CHANGE-OVER POINT
ITC2 SCHEDULE
WATER TEMP. FROM UNIT NO. 1
REQUIRED MIXED WARM WATER TEMP. FROM BOTH UNITS
WATER TEMP. ON NO. 1 & 2 CONDENSERS
UNIT NO. 2 OFF IN THIS RANGE
C.O.P. DATA FOR 2 TRANE CENTRAVACS 250 HP.
BASED ON: (1) FOULING FACTOR OF .001 ON EVAPORATOR AND CONDENSER
(2) KILOWATT INPUT
(3) TEMPERATURE SCHEDULE WITH BOTH MACHINES EQUALLY SHARING THE LOAD ABOVE 50% SYSTEM LOAD. BELOW 50%, SYSTEM LOAD ONLY UNIT NO. 1 OPERATES
(4) PARALLEL WATER CIRCUITS, WATER FLOWS CONSTANT
(5) SYSTEM LOAD 5,390,000 BTU/HR.
C.O.P.— BTU FROM CONDENSER / BTU INPUT TO MOTOR (KW x 3413)

COEFFICIENT OF PERFORMANCE curve for the CenTraVac never drops below 4.0 and reaches a high of 4.82 at 40% full system load.

10% of full system load, without cycling.

Water Circulates Through Shutdown Machine

Below 50% of full system load, with only one machine operating, half the water quantity in the system will continue to be circulated through the shutdown CenTraVac and will be neither heated nor cooled. As a consequence, the operating machine must heat the condenser water to a higher temperature.

At 40% full system load only one machine is operating. At this condition half of the water enters the non-operating CenTraVac condenser at 90° and also leaves at 90°.

The remaining half of the water enters the operating CenTraVac condenser at 90° but leaves at 98°. When the 98° water is mixed with that 90° water (540 gpm of each) it produces 1,080 gpm of water at 94° for the heating system.

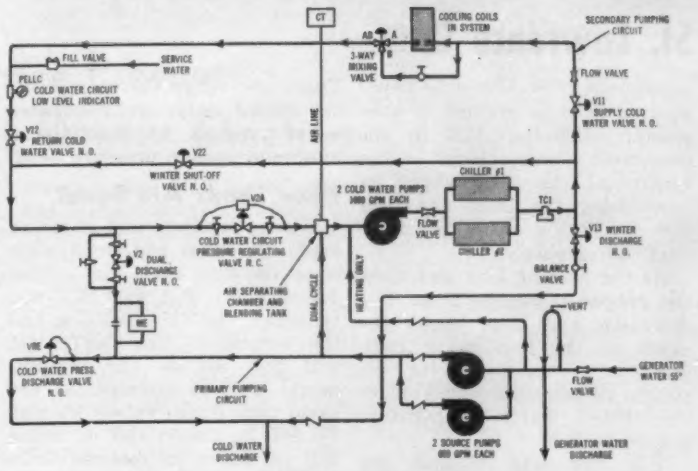


FIG. 1—Schematic diagram of the chiller circuit.

This heat pump system has two basic control cycles — the winter cycle when only heating is required, and the dual cycle when both heating and cooling are utilized simultaneously.

On the winter cycle (heating only), the condenser water circuit is closed while the chilled water circuit is an open circuit. Source water at 55° is discharged by the generators to the CenTraVac evaporators. Here the water is cooled to 49.4° and discharged through a winter discharge valve (V13 on Fig. 1) to the river.

Meanwhile, the condenser circuit is circulating water, controlled by submaster controllers (TC2 on Fig. 2), at a maximum temperature of 120° to the heating coils. This is accomplished through opening of the vanes to vary the load of the CenTraVac compressor. (The leaving condenser water temperature ranging from 120° at -20° outdoors to 81° at 60° outdoors.)

The water temperature rise through the condenser circuit is 10° at full heating load conditions. The condenser water circuit circulates 1,080 gpm, and the chilled water circuit circulates 1,600 gpm. A submaster controller in the condenser water circuit is in control of the CenTraVacs when the system requires heating.

Dual Cycle Satisfies Three Conditions

The dual cycle satisfies three conditions—cooling load greater than heating, heating load greater than cooling, and equal heating and cooling loads.

On the dual cycle, when the cooling load is greater, a master controller (TC1 on Fig. 1) in the chilled water circuit takes control of the CenTraVacs by positioning the inlet vanes of the compressor to vary the capacity.

On this cycle, chilled water enters the CenTraVac evaporators at 55° and leaves at 47.8°. This water is then circulated through the system cooling coils.

As the cooling load increases, TC1 increases its output pressure and opens the vanes of the CenTraVac compressor to increase its capacity.

When this takes place, the condenser water temperature begins to rise. TC2 now acts to open the discharge water valve (V5 on Fig. 2). This allows water to be dumped from the condenser circuit and at the same time more 75° river water is admitted to the circuit.

In this manner a maximum temperature of 87° leaving the condenser is maintained, however, the leaving water is never permitted to drop below 80°. This makes reheat available during this period.

On the dual cycle, when the

(Continued on next page)

230,000 MILES WITHOUT AN OVERHAUL!

OLD PRO

That truck engine on the opposite page is one of Chevrolet's famous Thriftmaster 6's—and if it looks a bit battle-scarred, there's a good reason! This one has just turned 230,000 miles, working for Earl McDaniel of Dallas Texas, on a hustling round-the-clock air mail delivery job. *And here's the stopper: this engine has never been overhauled. It has required only routine maintenance over all those miles.* That, you'll agree, is professional *truck* power at its dollar-saving best. That's the way it is with the most widely used engine in the business—Chevy's Thriftmaster 6!

Rarely does any truck engine—even a Chevy Thriftmaster 6—run up a performance record like this one. We point it out here merely as proof that the Thriftmaster 6 brings *staying power to spare* to any job it tackles. It's evidence that Chevrolet puts real *truck* "horses" under the hood—in a light-duty power plant that's built to outlast and outsave any other you can name.

Hustling air mail from airports to town on a stop-watch schedule is a 24 hours a day, 7 days a week responsibility Earl McDaniel, U.S. Mail Contractor, shares with his '59 Chevy ½-ton panel. And, according to Mr. McDaniel, after 230,000 miles, the truck "still purrs like a kitten . . . hasn't had or needed an engine overhaul. The pan has never been off, the valves have never needed grinding."

The Thriftmaster 6 provides the basic power for Chevy's conventional light-duty truck line. *Standard* in pickups, panels, light-duty stakes, delivery vans and the Suburban Carryall, it's the end product of many years of engineering refinement.

It provides economy-contoured camshaft and improved carburetion to give you extra power, extra miles from every gallon of gas. Also, there's a forged steel crankshaft, high quality steel and steel alloy valves, durable precision bearings, full pressure lubrication system, oil-bath air cleaner—all contributing to longer engine life and greater overall economy. This is the most experienced truck engine in the business, and it's ready to wade into your roughest work and keep you way ahead on fuel and maintenance expense. It'll pay you to check into it at your Chevrolet dealer's! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

THRIFTMASTER 6 PERFORMANCE DATA

Gross Horsepower	135 @ 4000 rpm
Net Horsepower	115 @ 3600 rpm
Gross Torque, lb-ft	217 @ 2000 rpm
Net Torque, lb-ft	195 @ 2000 rpm
Piston Displacement	235.5 cubic inches
Bore and Stroke	3⅞" x 3¹⁵⁄₁₆"
Compression Ratio	8.25 to 1

1961 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

St. Lawrence Dam--

(Continued from preceding page)

heating load is greater, a submaster controller TC2 in the condenser water circuit takes control of the CenTraVacs by positioning the inlet vanes of the CenTraVac compressor to vary the capacity.

As the heating load increases, the output pressures from TC2 increases and thus opens the vanes of the CenTraVac compressor to increase its capacity. When this takes place the chilled water temperature begins to fall.

TC1 now acts to open discharge water valve V2 on Fig. 1 which allows water to be dumped from this circuit and at the same time more 55° water from the generators is admitted to the circuit.

In this way more heat is made available to the system. There are relief valves in both the chilled water and condenser water circuits to maintain a minimum system pressure head.

When Loads Are Equal

When cooling and heating loads are equal and the system is on the dual cycle, the output pressure for TC1 and TC2 will be equal. The vane position and the output of the CenTraVac will now satisfy the requirements of both circuits. At the same time dump valves V2 and V5 will be closed and no water will be added or dumped from either circuit.

The system differs from most heat pumps in that the heating load is almost double the cooling load. This is because there is a large erection bay adjoining the building (where generators are assembled and repaired) which is heated only.

There are also a few areas in the administration building which are heated only. Because of these factors the heating load is 5,390,000 Btuh while the cooling load is 2,835,000 Btuh.

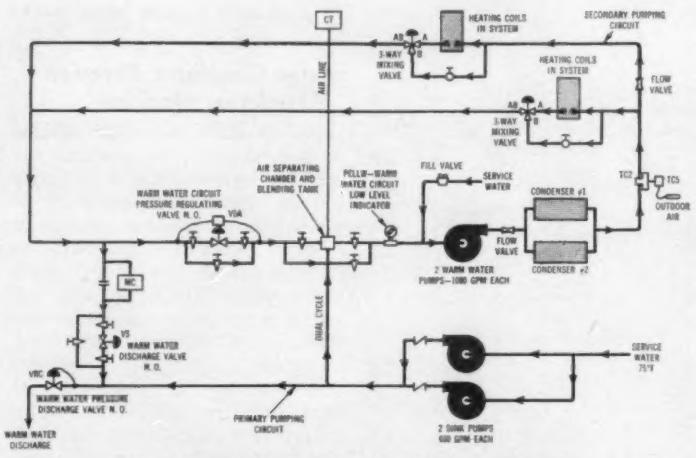


FIG. 2—Condenser circuit of dam heat pump system.

Only one CenTraVac is required to handle the cooling load. Capacity of each CenTraVac is such that one unit will satisfy heating or cooling requirements of the building whenever the outside air temperature is above 30°. Both CenTraVacs operate if the outdoor temperature is between -20° and 30°. The No. 2 CenTraVac cuts in and drops out automatically.

Changeover Automatic Or Manual

Changeover from the winter to the dual cycle may be either automatic by an outdoor master controller or manually from a selector switch on a supervisory data center panel.

The two CenTraVacs are piped in parallel. On the winter cycle when the system load is between 50 and 100% full load, both machines share the load equally. At loads of less than 50% full load, only one machine operates.

To prevent cycling of the No. 2 CenTraVac at the 50% full load condition, an adjustable time relay is set for 30 minutes between starts. At approximately 55% of full system load, both machines are operating at about 55% capacity.

When the No. 2 machine drops out at 50% full load, the No. 1 machine becomes fully loaded and operates at 100% capacity.

Because the chilled and condenser water pumps may be started and stopped independently of the CenTraVacs, flow switches are installed in the chilled and condenser water circuits as protective devices.

The coefficient of performance curve for the CenTraVacs never drops below 4.0 and reaches a high of 4.82 at 40% full system load.

The c.o.p. is highest between system loads of 30 and 70%. The machines were selected deliberately to have the best c.o.p. in this range because Ontario Hydro calculated the system would be operating in this area most of the time.

Double Duct System Used

The air side of the system is a double duct system using air blending units in the various rooms. Most of these are located under windows.

The special Trane high pressure air conditioning units (Fig. 3) consist of a draw-through sprayed coil cooling section, a Class III DWDI fan with inlet boxes and a hot and cold deck reheat section with radius outlets.

The reheat section has a reheat coil in the upper or hot deck section and an equalizing baffle plate in the lower or cold deck section.

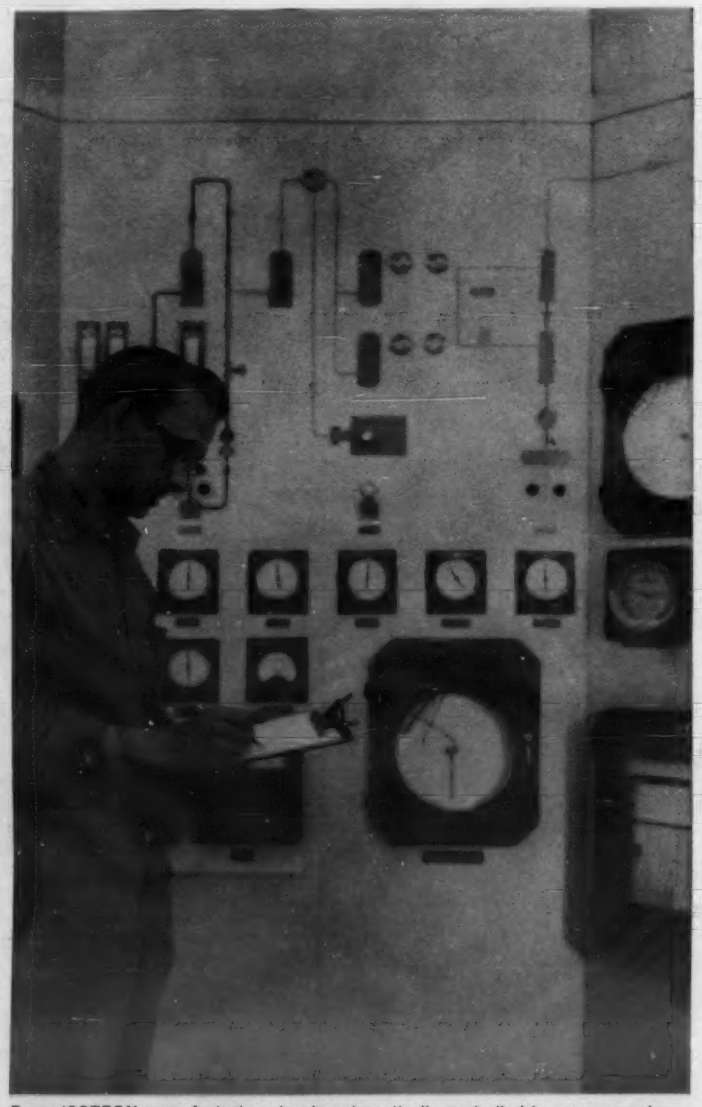
In winter, fresh air is mixed with generator discharge air to provide a fixed minimum of 35°. This air is then mixed with return air to provide a maximum temperature of 60°.

A portion of this 60° air passes directly into the cold ducts while the remainder passes over the reheat coil and into the hot ducts.

The maximum temperature in the hot duct is 105° at -20° outdoors. This temperature is controlled by an outdoor master, a duct submaster, and a three-way diverting valve on the coils.

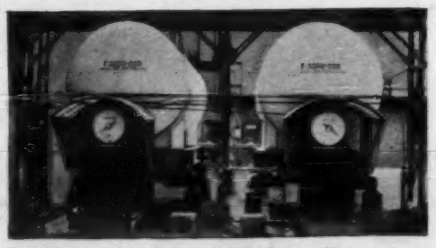
In summer a mixture of fresh and return air is passed over

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.



Every ISOTRON manufacturing step is automatically controlled to assure maximum dryness and purity.

From a modern complex of chemical plants come controlled-processed ISOTRON refrigerants that meet or surpass all accepted industry standards.



Incoming materials are tested for purity.

Returned cylinders are reconditioned and tested.

The Pennsalt factory seal on every cylinder is your guarantee of full weight and purity.

Pennsalt ISOTRON® refrigerants... controlled-process purity, dryness...guaranteed weight

Pennsalt ISOTRON refrigerants are manufactured under rigidly controlled conditions to meet or surpass all accepted industry standards . . . by a company with over a half century of experience in chemical processing. Constant analysis insures purity and minimum moisture content, while care in packaging and shipping means that quality *stays* in.

Every container of ISOTRON is equally pure and free of excess moisture and impurities.

Pennsalt offers you the widest choice of containers . . . from disposable Handi-Cans to cylinders, ton containers, tank trucks and tank cars. Prompt delivery is assured by Pennsalt's nationwide network of warehouse facilities.

ISOTRON—*The Key to Modern Living*

Pennsalt Chemicals ESTABLISHED 1850

Isotron Department
PENNSALT CHEMICALS CORPORATION
Three Penn Center
Philadelphia 2, Pa.

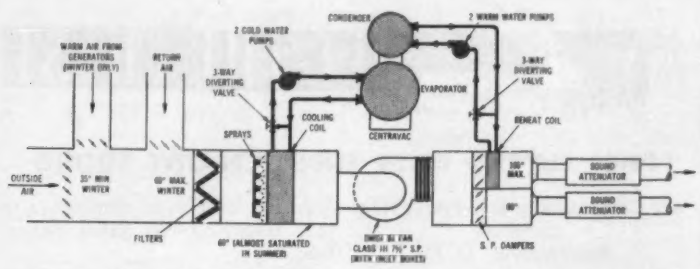


FIG. 3—Schematic diagram of one of the high pressure air handling units.

the sprayed cooling coils and cooled to 60° dry bulb almost saturated. A portion is passed directly into the cold ducts while the remainder is passed over the reheat coil.

If reheat should be required, the valve on the coil will open the desired amount in response to the outdoor master and discharge duct submaster.

The system is divided into zones for more accurate control. Static pressure dampers are installed in the hot and cold duct sections of the units and the volume of air passing through each section depends upon the hot and cold air quantities being selected by the room blending units.

If reheat is required during the dual cycle, the heat for this purpose actually comes from the heat removed by the cooling coils. This shows up in the form of available heat in the condenser water circuit. Therefore, reheat is obtained without extra cost during the dual cycle.

The system went into operation early in September 1958. It has now gone through three full heating seasons. While the base winter design is -20° the system has maintained design indoor temperature with outdoor temperature as low as -28°.

Architects and engineers of the Robert H. Saunders - St. Lawrence Generating Station was the Hydro Electric Power Commission's Architectural & Building Dept. The heat pump system was installed by J. Becker, Inc., Montreal, P.Q.

NEWS LIBRARY OF PROFITS

- ☐ Automatic Controls—$6.75
- ☐ Automatic Refrigeration—$13.50
- ☐ Boilers: Types, Characteristics, and Functions—$15

Commercial Refrigeration—$1.50 each. ☐ C-1 ☐ C-2 ☐ C-3

Key to Air Conditioning—$2 each. ☐ K-1 ☐ K-2 ☐ K-3

- ☐ Management Guide for Dealer-Contractors—$18
- ☐ New Master Service Manual—$1.50
- ☐ Refrigeration and Air Conditioning—$8.50
- ☐ Refrigeration Engineer's Manual—$3

Refrigeration Problems and Their Solution—$1.50 each ☐ J-1 ☐ J-2 ☐ J-3 ☐ J-4 ☐ J-5

Servicing Automobile Air Conditioners. ☐ Vol. 3 $1 Vols. 1 ☐, 2 ☐, 4 ☐, $2 ea.

- ☐ Parts and Labor Rates for Auto Air Conditioning—$30

Warm Air Heating & Air Conditioning Library

- ☐ Complete Library—$20
- ☐ Digest—$1.50
- ☐ 1. Comfort Survey—$1
- ☐ 2. Frame Houses—$1
- ☐ 3. Calculating Heat Loss—$1.50
- ☐ 3. Simplified Heat Loss—$.75
- ☐ 4. Perimeter Systems—$1.75
- ☐ 5. Gravity Systems—$1
- ☐ 6. Adjusting Air Conditioning—$1.25
- ☐ 7. Winter Systems—$1
- ☐ 7A. Ceiling Panel Systems—$1
- ☐ 8. Application Guide—$1.50
- ☐ 9. Year-round Systems—$1.25
- ☐ 9. (Supplement) Perimeter on-slab Systems—$.50
- ☐ 10. 4-in. Pipe Systems—$1.25
- ☐ 11. Summer Systems—$1.50

7-10-61

Business News Publishing Co.
450 W. Fort St., Detroit 26, Mich.

Please rush me books checked above.

Name .....

Company .....

Street .....

City..... Zone... State.....

☐ Send COD ☐ Payment enclosed

Society Honors 12

Awards, Certificates Presented By ASHRAE at Its Denver Meeting

DENVER—Alan B. Wagner, Case Institute of Technology, Cleveland, was awarded the $600 in cash and the certificate which go with the ASHAE-Homer Addams award for 1960 during the 68th annual meeting of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

Sponsored by the Addams Memorial Fund, the award is given to a graduate student working on an ASHRAE project; the school recommends the student.

George V. Downing, Jr., Merck & Co., received the ASHRAE-Klixon award for his paper, "Thermoelectric Materials," which appeared in the society's journal. The $150 cash award and certificate are sponsored by Spencer Thermostat Div., Metals & Controls Corp.

Bruno P. Morabito, Carrier Air Conditioning Co., won the gold key with diamond inset Wolverine-ASHRAE award for his paper on "How Higher Cooling Coil Differentials Affect System Economics." The award is sponsored by the Wolverine Tube Div. of Calumet & Hecla, Inc.

Carl F. Speich, Battelle Memorial Institute, Columbus, Ohio, was awarded the ASHRAE-Willis H. Carrier Award for his paper, "Acoustical Systems Determine Oil Burner Pulsations and Their Amplitudes." Sponsored by the Carrier Corp., the award offers $250 cash and a scroll.

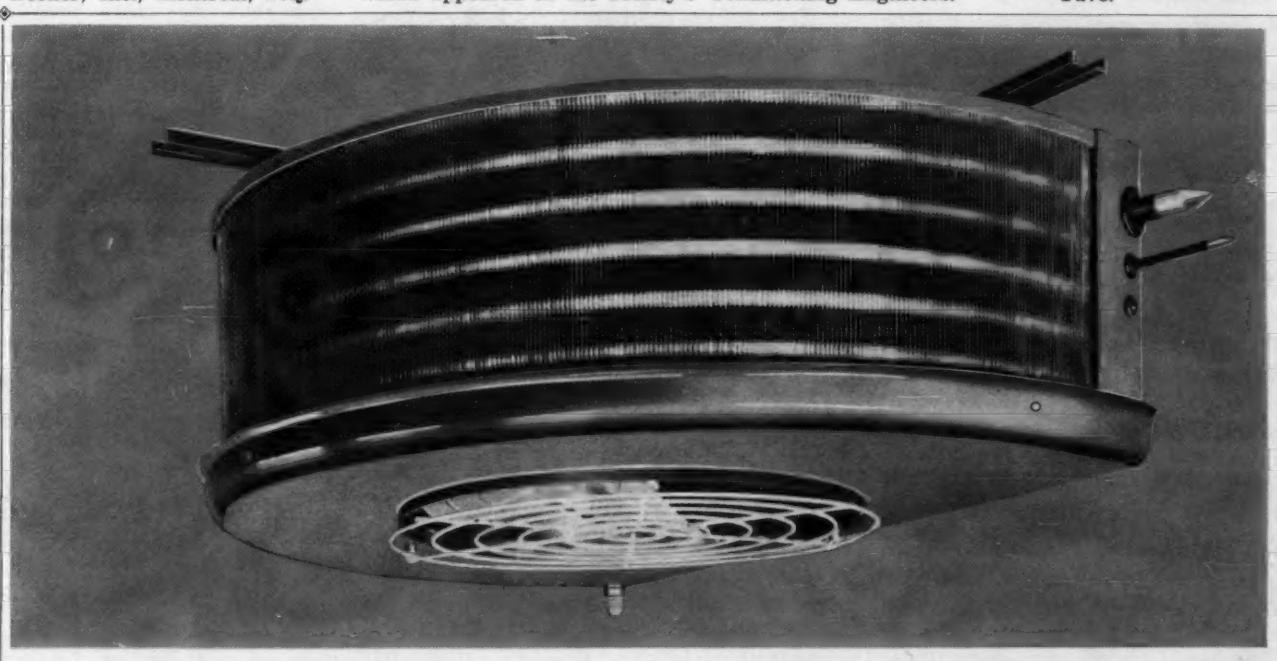
J. Donald Kroeker, Portland, Ore., won the ASHRAE-F. Paul Anderson award for outstanding work or service in heating, air conditioning, ventilating, or refrigeration.

This award is sponsored by the society and is in the form of a gold medal.

Fellow Certificates of ASHRAE were presented to Warren S. Harris, Charles O. Mackey, Alfred J. Offner, George V. Parmelee, Sewell H. Downs, Jomes E. Haines, and George L. Tuve.

Meyer Heads Toledo ASHRAE

TOLEDO — Joseph S. Meyer of Minneapolis-Honeywell Regulator Co. has been elected the 1961-62 president of the Toledo Chapter, American Society of Heating, Refrigerating & Air-Conditioning Engineers.



Larkin Coils feature Wolverine Tube in HUMI-TEMP units

Electro-tinned seamless copper tubing manufactured by Wolverine Tube, is one of the important components used by Larkin Coils, Inc., in production of its Humi-Temp units for walk-in coolers, cold storage rooms and allied installations.

Larkin, one of the best known OEM names in the refrigeration and air conditioning industry, features Wolverine light wall special temper tube in fabrication of its exclusive Cross Fin Coils, as well as in suction and liquid lines.

In addition to meeting Larkin's high standards of quality, Wolverine tubing for this application is manufactured to ASTM B-75 specifications. Each foot is rigidly quality controlled throughout the entire manufacturing process—each tube is made the Wolverine Tubemanship way to give maximum performance under the toughest operating conditions.

If your company uses copper, copper alloy or aluminum tubing, why not specify Wolverine, as does Larkin and other leading American companies. For complete information about the products and services of Wolverine Tube, Division of Calumet & Hecla, Inc., write for a free copy of the Wolverine Tubemanship Booklet.

WOLVERINE TUBE
DIVISION OF
Calumet & Hecla, Inc.
DEPT. O, 17346 SOUTHFIELD RD., ALLEN PARK, MICH.
TUBEMANSHIP in Copper—Copper Alloys—Aluminum—Special Metals

PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA
SALES OFFICES IN PRINCIPAL CITIES

9559

Editorial

Industrial Wheels Don't Turn Until and Unless Somebody Sells Something Creatively

DURING the last two-and-a-half centuries "advanced" nations—as exemplified by Canada and the U.S.A., Central Europe, members of the British Commonwealth and Scandinavia — have struggled potently, patently, and patiently toward a goal.

And made it!

Their proud achievement of decent and elevated living standards—plus personal freedom — have required five successive stages, which can be described thusly:

Stage No. 1: The peasant who didn't suspect it was possible to improve his station in life (nor did his sons and daughters have hope of betterment) was granted *the right to vote.* That started everything.

Second Stage: A new commercial elite emerged, output of food increased, and transportation became less primitive (from footpower to oxpower, wheels to trains, autos to jets).

Third Stage: Factories were built, small retail shops took hold, compound interest began working toward capital growth, and business investment rose to more than 10% of national income annually.

Now we move from past history to the Present Moment.

Fourth Stage of progress consists of willingness to *trade honestly* with other nations, plus encouragement and protection of inventions. This stage is attained after several generations have become accustomed to the notion of a *commercial* (rather than hereditary) elite.

Fifth and Final Stage is that of mass production, high consumption, and homogenization of economic and social classes through ultra-rapid travel and communications facilities.

Several nations arrived at that fourth stage of industrial maturity prior to World War I. Great Britain got there around 1850. France and the U.S.A. pursued Britain therein some 10 years later. Germany, Italy, Japan, Canada followed rapidly, along with Belgium, Holland, Australia, and Scandinavia.

Our Uncle Sam led all others in reaching the *fifth,* or high consumption stage, during the 1920's. (And we're still in front on this score.)

After World War II, Western Europe, plus Australia and Japan, joined North America (U.S.A. and Canada) in this benign fifth stage of achievement. The Communist countries lag.

How did we comparatively lucky citizens of the Western World enter that eminently desirable Fifth Consumption Stage ahead of other nations (which had preceded us into earlier hallmarks of culturally historic maturity)—and why?

Improved machinery for industrial production could be the first quick reply offered. But, mass production automatically does not insure high consumption. So that isn't The Answer, either.

A mass market of excited consumers (cultivated *via* advertising and merchandising) IS our "patented" ingredient.

Ingenious marketing techniques moved the U.S.A. into the most advanced stage of economic development any nation ever has achieved. Mass markets are built by advertising, promotion, and personal selling.

Let's never forget that fact in our eagerness to advance even further technologically. *Better selling* is the key to our present unemployment problem—which temporarily seems to be hamstrung by our automated progress.

It is part of a wise man to feed himself with moderate pleasant food and drink, and to take pleasure with perfumes, with the beauty of growing plants, dress, sports, music, and theaters, and other places of this kind which man may use without any hurt to his fellows.—Spinoza

Life always gets harder toward the summit—the cold increases, responsibility increases.—Nietzche

The illusion that times that were are better than those that are, has probably pervaded all ages.—Horace Greeley

WHAT'S HE SELLING? LOOKA THE CROWD HE'S GOT... Y'KNOW... THOSE GUYS MAKE A REAL BUCK...
TWO-WAY POTATO PEELERS... LEND ME A BUCK, NEWT... I'M GONNA GET ONE...
NOBODY'S EASIER TO SELL THAN A SALESMAN... AFTER OUR BOYS BUY THE PITCH-MAN OUT, MAYBE THEY CAN SELL HIM A CAR...
ONE THING... THERE'S NO TRADE-INS ON POTATO PEELERS...
BE RIGHT BACK... WANNA LISTEN TO HIS LINE...
THEY BETTER SELL SOMEBODY A CAR OR WE'LL ALL BE PEDDLING POTATOES!
ZIPPER & SALES
1961 ZIPPER 8 4 DOOR
APPRECIATING A FELLOW SALESMAN FROM THE INSIDE LOOKING OUT....
THANK AND A TIP OF THE HAT LO HAT to BUCK BUCHANAN, 360 CENTRAL AVE., NEWARK, N.J.

They'll Do It Every Time

by

Jimmy Hatlo

OFF THE CHEST

PRICE CUTTING BINGE ENDED CREATIVE SELLING

Air-Conditioning & Refrigeration Institute
Washington, D. C.

Editor:

Your editorial regarding the need for salesmen struck, as you knew it would, a very responsive note. It also goes without saying that I appreciate very much, and am flattered by, your references to me.

There is one element in this absence of selling that I feel very strongly has not received the attention it should.

I think it is more than coincidence that selling, as we used to know it and as we described it as creative selling, reached the vanishing point about the time that the entire country went on a binge of price cutting.

In the area of consumer durables—including such important items as automobiles and appliances of all kinds—our economy, in its years before the last war, included, very importantly, the creation of wants rather than being content with supplying needs. In my opinion, the cost of such creative selling is a perfectly legitimate item in the final selling price.

Today, the first statement made regarding such items is, in one form or another, an offer to make the sale at a lower price. Compensation to the creative salesman seems to have been the first item eliminated in this freely-offered price reduction.

What good is it to establish sales training clinics, write and print texts on selling, or to make any effort to enlist men for sales training when there are not sufficient dollars in the selling price to adequately compensate the salesman for his effort?

We must never abandon the effort to train more salesmen, but I think every sales manager in this country should give serious consideration to his responsibility to establish a selling price for his product or his service that would enable him to offer the incentive that would attract recruits to such programs.

Ours is an incentive system, and in spite of the do-gooders, any practical approach to our objectives would include money that is payment for services rendered as an important, if not the most important, incentive.

There is much more to this phase of our problem, but I am sure you fully sealize what I am talking about. I do wish there was some way to revive the basic elements of creative selling, which still belongs in the kind of economy on which our country made its greatest growth.

GEO. S. JONES, JR.,
Managing Director

IT'S THE SERVICE THAT SELLS IN ENGLAND

Norris-Thermador Corp.
Los Angeles, Calif.

Editor:

Nearly all appliances manufactured and sold in England are advertised with the list prices as set by the manufacturer. The dealer operates on a fixed discount of somewhere between 20 and 30%, depending on the item. You will find that nearly all warranty cards carry the statement that the warranty is void unless the full retail price has been paid.

To those who might judge this system as being non-competitive I might point out that the competition in this market is not by price but by the service, during and after a sale, rendered by the dealer. I might also add that some time after the end of the war the power companies, which are nationalized, were selling and servicing appliances. It was soon found, however, that private enterprise could offer far better and more flexible service than the necessary clumsy machinery of a state controlled operation so that this anticipated problem took care of itself.

PETER R. MANES

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

'The Conscience of the Industry'

GEORGE F. TAUBENECK, *Publisher*
EDWARD L. HENDERSON, *President*

PHIL B. REDEKER, *Editorial Director*
FRANK J. VERSAGI, *Editor*
C. DALE MERICLE, *Associate Editor*
JOHN O. SWEET,
HUGH T. MAHAR,
GEORGE M. HANNING, *Assistant Editors*
TERRY TREIBER, *Editorial Assistant*
JOHN MacLEAN, *Research & Prom. Dir.*
ROSALIE ASHLEY, *Circulation Mgr.*
DELORIS KROL, *Subscription Mgr.*
EDITH KING, *Reader Service Mgr.*

ROBERT M. PRICE, *Vice Pres. & Sales Director*
ALLEN SCHILDHAMMER, *Vice Pres. & Adv. Mgr.*
REX SMITH, *Western Adv. Mgr.*
FRANK L. TAYLOR, *Eastern Adv. Mgr.*
WALTER J. SCHULER, *General Production Mgr.*
ALICE M. BARROW, *Adv. Production Mgr.*

ADVERTISING OFFICES

New York	Detroit	Chicago	Los Angeles
521 Fifth Ave.	450 W. Fort St.	134 S. LaSalle St.	4710 Crenshaw
MU. 2-1928-9.	WOodward 2-0924	FRanklin 2-8643-4	Blvd.
Robert M. Price	A. Schildhammer	Rex Smith	AXminster 2-9501
Frank Taylor	Charles Pokorny	Dave Ryden	Justin Hannon

SUBSCRIBERS IN 83 COUNTRIES

Member, Audit Bureau of Circulations. Member, Associated Business Publications.

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: $6.00 per year; 2 years, $9.00; 3 years, $12.00. All other countries: $10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

From the Files of the News

25 years ago . . .

International politics flared up at the Seventh International Congress of Refrigeration meeting in The Hague, Holland, reported in person by Editor George Taubeneck, with dramatic withdrawals of the Italian and Russian delegations by Dictators Mussolini and Stalin, plus ringing pleas for international peace by the chairmen of the German and British delegations. . . . Peerless Ice Machine Co. has just introduced a full line of floor and ceiling type completely assembled air conditioning low sides, in sizes from 1 to 20-tons capacity.

Success of the two-year-old Air Conditioning Bureau of Boston, considered a "model" for similar bureaus is based on a 200-plus membership that includes air conditioning dealers, manufacturers, utilities, installation contractors, architects, and users. . . . Cross examination of Grunow's engineer on that firm's advertising, and endorsement of electric refrigeration by prominent bacteriologists mark the FTC hearing to determine whether an ice company's advertising—which asserts that electric refrigeration injures food—is "unfair trade" practicing.

An unusual feature of the Airtemp air conditioning system in the Statler hotel, St. Louis, is the "Statler-Airtemp Regulator," with thermometers showing indoor and outdoor temperatures and controls permitting guests to regulate the degree of cooling and dehumidification as well as the amount of fresh air coming into the room.

The editorial: "how much real **selling** of air conditioning is being done this summer? Most installation are being **bought** (rather than **sold**) . . . the idea is growing that the industry is putting too much reliance upon the so-called 'public acceptance' of air conditioning . . . and 'public acceptance' should not be confused with **active desire** or **willingness to buy** . . . our belief that air conditioning sales will be accelerated when more electric refrigeration organizations are induced to enter the business (because **they** know how to **sell**). . . . A 14-story building in New York which houses the general headquarters of Johns-Manville Corp., and others, has been completely air conditioned by the Frick distributor there.

10 years ago . . .

A New York metropolitan area food supermarket chain reports that it is installing air conditioning in all of its 14 stores in Westchester County, after installation of Typhoon package units in a trial job last summer had given slumping sales a shot in the arm, increasing volume 47.3% for the months of July, August, and September. Air conditioning, said one of the chain operators, "drew customers into the store with the pull of a juke box gathering bobby-soxers to an ice cream parlor."

A window air conditioner has been installed in a Texas fireplace (everything is big in Texas). . . . Fedders is paying its air conditioning dealers $2 for every home demonstration. . . . By preventing deterioration of the sensitized printing paper that constitutes a larger percentage of sales at a Lima, Ohio paper supply company, air conditioning saves the firm many dollars in inventory losses, the management has reported.

Shipments of components and accessories for air conditioning in 1950 were up 49% over 1949, according to the U.S. Bureau of the Census. . . . An air conditioned, sound-proofed, glassed-in room located in the main auditorium of an Ashland City, Tenn. movie theater provides a "cry room" for mother and baby, permitting the mother to continue to watch the movie without disturbing other patrons.

Warren Webster Names Nicholas Klemm, Jr.

CAMDEN, N. J. — Nicholas Klemm, Jr., has been named product manager, school equipment, for Warren Webster & Co., Inc., it was announced by Andrew F. Ward, marketing vice president.

N. Klemm, Jr.

Klemm has been with Warren Webster for the past 11 years, acting in various sales and engineering capacities.

International Panorama-of-Products Showroom Opened In N.Y. by Crane

NEW YORK CITY — Crane Co. recently opened an International Panorama-of-Products Showroom at 320 Park Ave. here.

Created by the design firm of Griswold, Heckle & Keiser Inc., the showroom will spotlight Crane Co.'s plumbing, heating, and air conditioning products for home and industry, as well as the company's extensive line of industrial valves, piping, water conditioning units, and electronic controls.

"The interior design follows a Japanese garden theme and creates an appreciation and awareness of product beauty, and performance qualities," the company said. In this unusual departure from the ordinary 'catalogue' type showroom, the designers have arranged the household and industrial products amid extensive tropical foliage on a series of turntables that are suspended over pools of shimmering water. The use of a connecting wooden bridge and simulated stone walkways complete the desired 'shibui' effect.

"The Showroom is located at one of the world's crossroad corners—50th St. and Park Ave. —diagonally across from the Waldorf-Astoria. . . .

"Though Crane Co. products will not be sold at the showroom, architectural, engineering, and other consultants will be on hand to supply complete information on the products displayed and to guide in developing practical solutions to home remodeling, industrial specifications, climate control, and related problems. Information concerning local Crane Co. suppliers, as well as distributors throughout the world will be available."

The showroom will be open from 9 a.m. to 5 p.m. Monday through Friday. Special tours for industrial groups, women's clubs, student and other organizations may be arranged through Crane Co. Showroom, 320 Park Ave., New York City.

Plans are now under way to open similar Crane showrooms in Chicago and Los Angeles later in the year.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

The Fast, Convenient, Low Cost Way...Ton Cylinders Delivered by Ucon® RACK TRUCKS

Ucon® refrigerants

Convenience is the word for the Ucon Refrigerants Rack Truck...and *economy*, too. For refrigerant users preferring less-than-carload quantities, *and* individually packaged units, the Rack Truck reduces in-plant handling problems, eliminates need for special bulk storage facilities.

One-ton cylinders are unloaded directly onto forklift trucks or other haul away devices with the Rack Truck's own hoist mechanism...or if space permits, the Rack Truck can be driven right into your warehouse storage area.

Result: substantial savings in freight costs, greater handling safety, reduced outlay for cylinder deposit, and far fewer man-hours required for unloading, testing and handling...more profits for you!

Your local Ucon Refrigerants Representative has the whole, eye-opening story on the big savings that can be yours with convenient Rack Truck deliveries. Call him today...and put this money-saving fleet to work for *you!*

UNION CARBIDE

Ucon® refrigerants

These 5 Ucon Refrigerants will meet your refrigeration and air conditioning needs

- Ucon Refrigerant 11 Trichloromonofluoromethane
- Ucon Refrigerant 12 Dichlorodifluoromethane
- Ucon Refrigerant 22 Monochlorodifluoromethane
- Ucon Refrigerant 113 Trichlorotrifluoroethane
- Ucon Refrigerant 114 Dichlorotetrafluoroethane

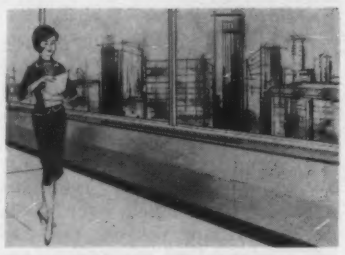
UNION CARBIDE CHEMICALS COMPANY, *Division of Union Carbide Corporation,* 270 Park Avenue, New York 17, New York

Induction Room Conditioners Feature New Styling

● A line of induction room air conditioners which feature new cabinet styling and reportedly occupy less floor space were previewed recently by The Trane Co., Dept. AH&RN, La Crosse, Wis.

Shipments will begin late this year.

The new "UniTrane" line has a front panel that is unbroken by



recirculated air grillwork. Secondary air is drawn in through a concealed opening in the kick space under the unit. Outlet grilles are concealed in the cabinet top, it was pointed out by the manufacturer.

Standard vertical cabinet models are 6 in. deep and 24 in. high, including the 4-in. kick space. Low vertical cabinet models are 9 in. deep and 12 in. high.

Matching enclosures are available to join more than one unit in a continuous wall-to-wall cabinet. The unbroken lines of the continuous cabinet installation presents a cleaner, more modern appearance, Trane said.

Ten models: standard vertical and horizontal, new high capacity vertical and horizontal, and low vertical, are all available with and without cabinets. Eight nozzle arrangements, five unit sizes, and three coils—plus the wide range of available models—allows selection flexibility which assures economical installation and operating costs, Trane said.

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

Gas-Fired Boilers Have 7% More Capacity

● Production of a new series of gas-fired boilers designed for commercial and large residential installations has been announced by Mueller Climatrol Div., Worthington Corp., Dept. AH&RN, 2005 West Oklahoma Ave., Milwaukee 1.

"All new Type 22 boilers are shipped disassembled to assure easy handling to installation sites," it was pointed out. "Improved boiler sections provide 7% greater Btuh capacity than previous models. A seven-section boiler of 450,000 Btuh input requires only 9.4 sq ft of floor space. All sections are of parallel ground construction to eliminate the need for putty between sections and assure absolute fit between sections."

Type 22 boilers are available in sizes ranging from a three-section 150,000 Btuh input to a ten-section 675,000 Btuh input model; for steam or hot water—gravity or forced circulation. A wide selection of tankless heaters are also available for commercial hot water supply.

PENN WATER VALVE OUTSELLS ALL OTHERS

ONE BIG REASON is that the Penn "246" stays on the job longer than ordinary valves. In the Penn water valve, two diaphragms keep water away from the bellows, range spring and sliding parts. Thus, water with its rust, corrosion and sedimentation never has a chance to attack these "working parts" and cause destruction. Ask your wholesaler... he'll tell you the Series 246 is the best.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 39th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Ice Maker Designed For Counter-Top Use

● Development of a new counter-top ice maker for restaurants, drive-ins, institutional cafeterias, and taverns has been announced by Glasco Corp., Dept. AH&RN, Fifth and Perkins, Muncie, Ind.

The unit produces up to 200 lbs of "bite-size" cubes per day, with storage for an additional 100 lbs, the company said. It measures 27 in. wide, 20 in. deep, and 44 in. high. The serving door is just above counter height, eliminating any need for bending over to obtain ice, Glasco pointed out.

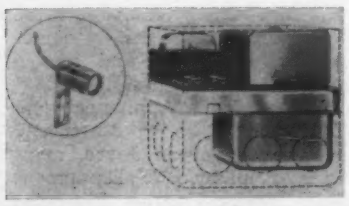
"By a simple adjustment, the ¾-in. cubelets may be delivered in any thickness from wafer-thin to a slow-melting ½-in. size," it was stated. "A special feature of the ice-making device eliminates all cloudiness and produces cubelets that are crystal clear.

"Air cooled and quiet in operation, the Glasco model CIM-200 ice maker has its unique cube-freezing mechanism on top, with a large storage bin below. The welded steel cabinet is heavily insulated, so that the cubelets retain their original size and shape in storage. It comes in ice-blue, white, or metallic gray, with anodized aluminum trim. The stainless steel serving doors are removable for peak-hour use."

'Minit-Cure'

● Introduction of "Minit-Cure," a rapid curing formulated expoxy adhesive, has been announced by Allaco Products, Dept. AH&RN, 238 Main St., Cambridge 42, Mass.

"Minit-Cure will cure in 60 seconds at room temperature and can be accelerated to 45 seconds with use of infrared heat," the company said. Possible applications include bonding metal to metal, plastic to metal, plastic to plastic, or any other porous or non-porous surfaces, it was stated.

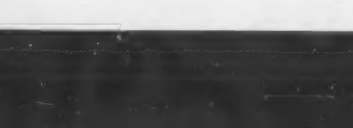


Oil Burner Control Made More Compact

● Announcing a change in its "Kwik-Sensor" oil burner primary control, White-Rodgers Co., Dept. AH&RN, 9797 Reavis Rd., St. Louis 23, Mo., said the new "Type 668" Kwik-Sensor primary is so compact it can be mounted on a 4-in. by 4-in. junction box, eliminating any need for special enclosures.

White-Rodgers pointed out that savings in space "results entirely from greater compactness in over-all design, rather than any modification of components. The 668 retains every operating advantage of the original 660 Kwik-Sensor controls which have been field proved for over three years; there are no new parts requiring additional field testing.

"The new 668 Kwik-Sensor primary control is 4 in. by 4 in. by $1\frac{15}{16}$ in. deep (exclusive of junction box). With flame detector, the shipping weight of the entire control is but 2 lbs 6 oz. Comparable figures for the original 660 Kwik-Sensor are $6\frac{15}{16}$ in., $5\frac{13}{16}$ in, $3\frac{13}{32}$ in. and 3 lbs 4 oz."



Add Remote Air-Cooled Condensing Units

● Remote air-cooled condensing units in 90,000 and 118,000 Btu capacities have been added to the line of air conditioning equipment sold by Day & Night Mfg. Co., Dept. AH&RN, P.O. Box 2222, La Puente, Calif.

This heavy-duty equipment, designed primarily for commercial and industrial rooftop installations, has a low silhouette design, the company said.

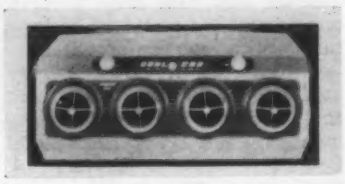
The over-all height is approximately 51 in. The condenser coil is mounted horizontal to decrease the height. Air discharge is upward, from a large diameter belt-driven fan with low-speed operation. The weatherproof casing is heavy-gauge embossed aluminum reinforced with steel. Weight of the model 96 AR-3 is 800 lbs; that of the 120 AR-3—1,100 lbs., according to the manufacturer.

Installation is said to be simplified by shipment in two sections. The unit is shipped, evacuated, with a holding charge. Choice of fan-coil units or horizontal air-flow coils is offered. Accessory motor and drive kits provide "a full range of air delivery requirements."

Duct System Is for Gas Floor Furnace

● The introduction of a new central duct system gas floor furnace has been announced by Temco, Inc., Dept. AH&RN, Nashville 9, Tenn. This compact, shallow depth, 85,000 Btu unit is designed to fit in the opening of most large capacity floor furnaces, the company said.

Deluxe 'Cool Car' Unit Released



● A new version of the "Cool Car" under-dash air conditioning unit for 1961 has been released by Clardy Mfg. Co., Dept. AH&RN, 1728 Layton St., Fort Worth 11, Texas.

"It is called the Cool Car De Luxe and is available at a slight increase in price," the company pointed out. "The four front louvers have been changed to utilize four ball and socket louvers which add to the appearance. They are easily and quickly adjusted.

"The basic case is still in a chrome finish; the balls are also finished in chrome. The grilles are available in color, and lets the customer color blend his air conditioning unit with the interior of his car."

'Patchmaster' Available In Wide Range of Pipe

● Marman's heavy-duty "Patchmaster" is now available in a wide range of pipe sizes from ½ in. to 24 in. in standard pipe sizes and from 2 in. through 8 in. in o.d. pipe sizes, according to Marman Div., Aeroquip Corp., Dept. AH&RN, 11214 Exposition Blvd., Los Angeles 64, Calif. It can be supplied in four clamp widths ranging from 3 in. through 12 in.

"Safe, fast emergency or permanent pipe repairs can be made with the Patchmaster," Marman said. "A stainless steel band resists corrosion and conforms to pipe contours and irregularities but will not collapse weak pipe," Marman points out.

"The malleable cast iron lugs provide extra strength and durability and are especially treated to prevent corrosion. The pivot-action of the lug tightens to pipe contour without biting into pipe. Synthetic rubber patch will not deteriorate and is resistant to a wide range of chemicals."

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

Water Treatment Offers 3-Fold Protection

● Water treatment for small cooling towers and evaporative condensers is available from the Universal Refining Products Co., Inc., Dept. AH&RN, 1133 Broadway, New York City 10.

Known as "Universal A-C-T," it offers threefold protection against corrosion, scale formation, and slime formation, according to the company. The treatment is supplied in a self-feeding disposable unit.

"Formulations are based on the same know-how and scientific methods used for treating recirculated cooling water in large air conditioning units."

service... quality and experience in

REFRIGERANTS

you can count on!

TRONA*

TRONA distributes Pennsalt's

ISOTRON†

Refrigerants in bulk cylinders and disposable Charg-A-Can® containers

ISOTRON-11
ISOTRON-12
ISOTRON-13
ISOTRON-22
ISOTRON-113
ISOTRON-114

Also TRONA METHYL CHLORIDE & SULFUR DIOXIDE

How do *you* measure the value of a supplier?... efficient service to the trade... uniform quality... years of experience in supplying the product? Refrigeration wholesalers we do business with say by any standard the answer is contained in the name TRONA—for more than two decades the source of *dependable* refrigerant products and service. Why does Trona serve you better? You get factory-controlled quality, on-time delivery from key distribution points, and a coast-to-coast organization of trained field representatives who know the wholesaler's marketing needs.

TRONA

American Potash & Chemical Corporation

3000 WEST SIXTH STREET, LOS ANGELES 54, CALIFORNIA
99 PARK AVENUE, NEW YORK 16, NEW YORK
EXPORT OFFICE: 99 PARK AVENUE, NEW YORK 16, NEW YORK

*TRADEMARK AP&CC †ISOTRON IS PENNSALT'S TRADEMARK FOR ITS FLUORINATED HYDROCARBONS.

Current Literature

Capacitor Guide

NORTH ADAMS, Mass. — A combination catalog-service guide on capacitors for a-c applications has been released by the Sprague Products Co.

In addition to full descriptions and listings of Sprague motor - starting electrolytic as well as Clorinol - impregnated motor-run capacitors, this guide, Form C-914, contains pages of service and replacement information on motor capacitors.

Copies of Catalog C-914 may be obtained without charge from all Sprague distributors or directly from Sprague Products Co., 63 Marshall St., North Adams, Mass., by sending 10¢ to cover handling.

Molecular Sieve Driers

DETROIT — Describing and illustrating how Detroit molecular sieve filter driers of eight different types provide efficient drying, filtering, and acid removal in refrigeration and air conditioning systems, a new six-page technical bulletin (276A) has been issued by the American-Standard Controls Div., 5900 Trumbull Ave., Detroit 8.

Principal features of these filter driers are outlined, supplemented by photos and cross-sectional views, and appropriate specification tables for each type presented. Also given is a performance data table listing connection sizes, pressure drop, psi, and drying capacity for all eight types.

Truck Fleet Leasing

CHICAGO—A second edition of its study analyzing the merits and demerits of truck fleet leasing plans compared with company ownership has been published by the Foundation for Management Research, 121 West Adams St., Chicago 3.

It is entitled: *"Truck Fleets: Lease or Buy? An Analysis of Truck Transportation Costs."* The 32-page study has been revised to include data from a new survey covering fleet operation practices of more than 4,500 corporations, as well as leasing plans offered by national truck leasing organizations.

Single free copies of the study may be obtained by executives by writing to the foundation.

Registers, Grilles

CHICAGO—A 40-page Catalog No. 61 describing the line of wall grilles, "Fabrikated" cold air faces, registers, and grilles is available from The Independent Register Co., 3747 East 93rd St., Cleveland 5.

Flexible Metal Hose

NEW YORK CITY—Data to help the engineer select the right flexible metal hose and design it into each specific installation is now available in a new, 32-page, illustrated guide (Catalog 600) produced by Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York City 34.

"Included is information on how to rate hose working pressures so that corrections can be made for job conditions," the company said. "Among the problems gone into are non-steady pressures, elevated temperatures, and the fitting attachment to use with each hose style. Much of this information is given in table form."

Water Cooling Coils

LINDEN, N. J. — Coupled with its announcement of the establishment of a full Coil Production Dept., Astro Products Corp., 1601 W. Edgar Rd. here, released a new flyer containing a table of "Nominal Capacities of Water Cooling Coils."

This table, based on air entering coil at 85°F d.b., 69° w.b., water temperature 45°-55°, 500 fpm face velocity, will save valuable time in rough calculations, the company said.

The brochure also includes illustrations of the coils, and facts concerning the tubing, fins, types of return bends, headers, and other data.

Incentive Contests

URBANA, Ill.—A booklet on "Merchant Sponsored Incentive Contests for Retail Employes" was published recently by the Bureau of Business Management, University of Illinois.

The 20-page booklet was written by Prof. Donald W. Scotton of the marketing department of the College of Commerce & Business Administration, University of Illinois.

It outlines the different types of incentive contests, enumerates types and sources of awards, and tells how to plan and administer a contest. Income tax implications are noted.

Copies of the booklet are available at 75 cents each from the Bureau of Business Management, University of Illinois, 30 Commerce Annex, Urbana. A discount of 20% is offered on orders of 100 or more copies.

Acoustical Problems

TOLEDO — A new technical brochure from Owens-Corning Fiberglas Corp. outlines approaches to solving acoustical problems in appliances and equipment.

Both absorption of air-borne noise and reduction of structurally-borne sound are explained. The information is documented with details of test methods used to arrive at basic data presented for "maximum quieting." The book is illustrated with performance tables, nomographs, drawings, and photographs.

Write for "Appliance and Equipment Quieting Materials" in care of Severn Joyce, manager, Appliance & Equipment Sales, Owens-Corning Fiberglas Corp., Toledo 1.

Insulating Homes

CHICAGO—A four-page brochure announced by Reflectal Corp., Borg-Warner Bldg., 200 S. Michigan Ave., Chicago 4, Ill., presents a new method for insulating electrically - heated homes, the company announced.

"Facts and figures on a five-year study of an electrically heated home in the Cincinnati area presented in the brochure show how it was possible to electrically heat 1,239 sq ft of living area for only $180 annually," it was stated.

FROM Luxaire® NEW GAS UNITS

Designed . . . Constructed . . . Priced to Reduce Installed Costs!

ANOTHER Luxaire COST CUTTER

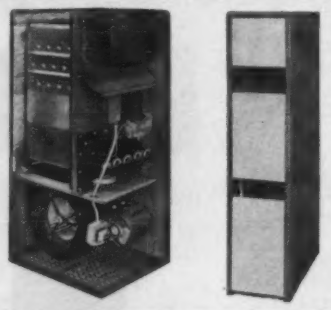
FACTORY-PACKAGED BASEMENT UNITS FOR EASIER INSTALLATIONS!

Completely assembled and wired at the factory, these compact Luxaire Winter Air Conditioners are constructed on a solid floor base with mounting channels. Heat Exchangers are 16 Gauge Steel, End-Welded. Controls are Honeywell 24 Volt. Blowers are sized for cooling, quieter for heating. 5 sizes, 100,000 to 200,000 Btuh. Prices are competitive with hi-boy units adapted for basement installation — **for lower installed costs!**

ANOTHER Luxaire COST CUTTER

UPFLOW AND COUNTERFLOW UNITS WITH PREMIUM 24 VOLT CONTROLS!

The new control setup for the Luxaire Series SH (Upflow) and SHC (Counterflow) Units includes: the Honeywell Combination Fan and Limit Control; Combination Gas Pressure Regulator, Automatic Gas Valve and Automatic Pilot; Thermostat with Heat Anticipator. Upflow: 50,000-200,000 Btuh. Counterflow: 75,000-150,000 Btuh. Heat Exchangers are 16 Gauge, End-Welded. Blowers are sized for cooling. **No increase in price!**

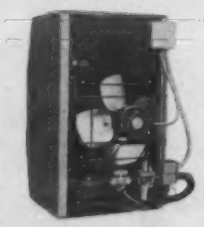


New 50,000 Btuh Upflow Unit is pictured at left. Only 12" wide, this is a complete, compact Luxaire Winter Air Conditioner for motels, double-houses, added rooms . . . **priced for extra business!**

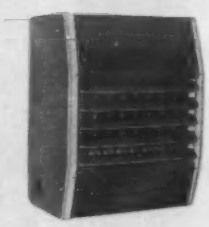
ANOTHER Luxaire COST CUTTER

UNIT HEATERS WITH EITHER PROPELLER FAN OR CENTRIFUGAL BLOWER!

With Centrifugal Blower for connection of discharge duct



With Propeller Fan for extra-quiet operation

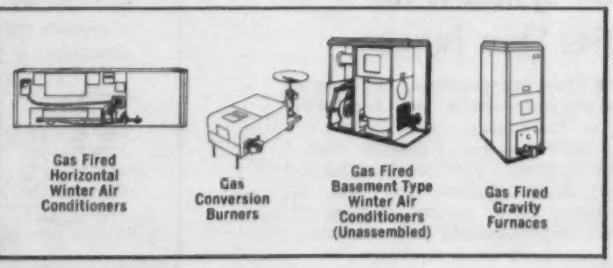


Distinctive, attractive styling for eye appeal

Now, top-performing, quiet-operating Luxaire Unit Heaters are available equipped with Direct Drive Centrifugal Blowers for extra-long air throws or installation with ducts. 5 Sizes, 60,000 to 240,000 Btuh, cover the complete range of demand — **with business building prices!**

YOUR SUPERMARKET FOR BETTER HEATING IS YOUR LUXAIRE DISTRIBUTOR!

Luxaire
THE C. A. OLSEN MFG. CO.
ELYRIA, OHIO



Gas Fired Horizontal Winter Air Conditioners

Gas Conversion Burners

Gas Fired Basement Type Winter Air Conditioners (Unassembled)

Gas Fired Gravity Furnaces

TTMA To Meet In Hot Springs July 16-19

HOT SPRINGS, Va.—A talk on "Refrigeration Developments —Here and Abroad" is among presentations scheduled for the 13th annual summer meeting of the Truck-Trailer Manufacturers Association here July 16-19.

The talk will be given by P. Reece Achenbach, chief of the Mechanical Systems Section of the National Bureau of Standards. In another talk, William C. Crow, director of the Transportation & Facilities Research Div. of U.S. Dept. of Agriculture, will discuss "Trends In Transportation of Perishables."

Also scheduled is a "Reefer Roundtable" session. This will feature a discussion of the air distribution studies of the National Bureau of Standards. Another event is a shirt-sleeve round table engineering session.

Bloomington, Ind. To Get 'Shield' Story

BLOOMINGTON, Ind.—At a meeting scheduled for Tuesday evening, July 11, at the Esco Supply Co., at 515½ West Second St., heating and air conditioning dealer-contractors from the Bloomington marketing area will get the full story of the Silver Shield Program, it was announced by the National Warm Air Heating & Air Conditioning Association of Cleveland.

Cooperating with the national association is a Silver Shield Action Committee consisting of: Boyd "Bud" Skeen, Skeen's Heating Co.; James Farmer, Farmer Heating Service Co.; and James Moore, Woodward Heating Co.

Pennsalt Appoints R. C. Willson, Jr.

PHILADELPHIA — Pennsalt Chemicals Corp. has announced the appointment of Richard C. Willson, Jr., as technical service manager for "Isotron" products.

R. Willson, Jr.

In his newly-created position, Willson will be responsible for all aspects of technical service on Pennsalt's line of Isotron refrigerants, aerosol propellents, and foam-blowing agents. Included under his supervision will be Isotron engineering services and the Isotron technical service laboratories.

Willson has held various positions in the Industrial Chemicals Div. and the Isotron Dept.

RACCA, UA Cooperate

Cooling Industry In Southern Calif. Setting Up Demonstration Lab Facility

LOS ANGELES—In an effort to give a broader base to its program of journeymen and apprentice training, the refrigeration and air conditioning industry in South California is currently setting up a demonstration laboratory facility.

To contain working systems and sub-assembly of fundamental systems, the laboratory is being developed as an industry wide effort for Los Angeles and Orange counties through a Joint Journeymen & Apprentice Training Committee, composed of representatives of the Southern California Chapter of RACCA and Refrigeration Fitters, branch local union No. 250, UA.

According to Harry Bowe, coordinator of the training program, the lab will be used to demonstrate principles of operation, adjustment, and control of refrigeration and air conditioning systems.

He said the lab is also being established through the cooperation of the Los Angeles City School system and will be set up in the Los Angeles Trade Technical college.

Being readied for the start of the fall training semester in September, the facility will feature working equipment with visual sections utilized to demonstrate working components.

The first laboratory unit currently under preparation is designed to show the flow characteristics of pumps and piping. This will be followed by one on instruments and controls to demonstrate the elements involved in starting and stopping of equipment as well as control of air.

Future plans for the lab facility also call for the installation of equipment operating under controlled load conditions which the refrigeration fitter encounters in the field.

Bowe said that as the first of its type in the Southern California area, the laboratory will serve as an important supplement to the regular course of instruction and training assistance being conducted for journeymen and apprentices working in the industry.

NEW ELECTRIC UNITS . . . OIL UNITS

Unsurpassed Engineering Excellence . . . Always Competitive in Price!

ALL ELECTRIC YEAR 'ROUND AIR CONDITIONING AT LOWEST COST!

ANOTHER Luxaire COST CUTTER

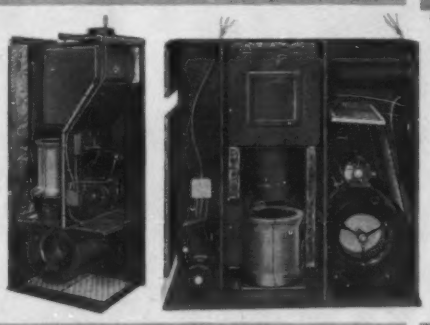
At right, Upflow position
Center, Counterflow position
Left, Horizontal position

Available in 6 Sizes — 34,000 to 120,000 Btuh — Luxaire Electric Winter Air Conditioning Units are compact, versatile, completely assembled and wired. They can be installed in a Horizontal, Upflow or Counterflow position. Blowers are sized for cooling. Controls are Honeywell. Slide-Out Filter Frame is Standard. **Prices are exceptionally competitive!**

OIL • FACTORY PACKAGED • UPFLOW, BASEMENT, COUNTERFLOW UNITS!

ANOTHER Luxaire COST CUTTER

New Luxaire Oil Fired Winter Air Conditioners are shipped completely assembled with the Oil Burner and Moulded Firebox installed in the Round Heavy Gauge Heat Exchanger. All internal wiring is provided for installation of the Stack Mounted Primary Control and the Combination Fan and Limit Control to be located for optimum performance. **Quiet, dependable performance — low installed cost!**

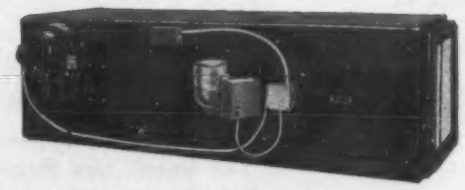


Interior View of Upflow Furnace

Interior view of Basement Furnace

LOW • COMPACT • PACKAGED OIL AND GAS HORIZONTAL UNITS!

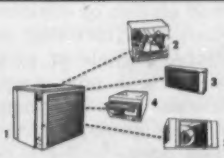
ANOTHER Luxaire COST CUTTER



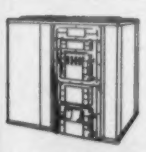
Oil Fired Horizontal Winter Air Conditioner as shipped from the factory, complete with Burner, Firebox, Controls and Wiring Harness installed

Now, Oil as well as Gas Fired Horizontal Winter Air Conditioners are assembled and wired at the factory. Either Gas or Oil, these heavily constructed units are assembled for left hand discharge but can be readily converted for right hand discharge in the field. Blowers are sized for cooling. Controls are top brand. **Compare the competitive prices for lowest installed cost!**

WITH LUXAIRE — DESIGN, CONSTRUCTION AND PRICE ARE RIGHT FOR YOUR MARKET!



(1) 2, 3, 4, 5 and 7½ Ton Air Cooled Condensing Units (2) Plenum Type Coils (3) Duct Type Coils (4) Counterflow Coils (5) Air Handling, Blower-Coil Units



Coal Winter Air Conditioners and Gravity Furnaces

Combination Year 'Round Air Conditioners Gas or Oil Fired Air or Water Cooled

Luxaire
THE C. A. OLSEN MFG. CO.
ELYRIA, OHIO

Packless Metal Hose Moves to York from Mt. Vernon, N.Y.

YORK, Pa.—Kenneth B. Zifferer, president of Packless Metal Hose, Inc., announced that the company has moved its general offices and manufacturing facilities to York from Mt. Vernon, N. Y.

Zifferer is also president of U. S. Expansion Bolt Co., York, which recently purchased Packless Metal Hose, Inc.

A manufacturing plant and office building at 635 Hay St., York, has been bought and renovated to house the Packless operation. The property is adjacent to the U. S. Expansion Bolt plant and offices.

Zifferer stated the move will give the company increased plant facilities needed to expand the product line and that Packless will also be able to avail itself of added engineering and technical personnel who are in the U. S. E. organization.

Packless Metal Hose manufactures seamless hose and couplings for conveying steam, gases, and liquids; vibration absorbers for the air conditioning and refrigeration industries, "Flexline" units for pump connections and heating installations, and other products.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

ASHRAE Elects Officers, Honors Past President

HONORED FOR A JOB well done, Robert H. Tull (left), retiring president of ASHRAE, receives an award commemorating his work while in that office from John Everetts, Jr., incoming president of the society.

PRINCIPAL NATIONAL ASHRAE officers, pictured following their induction into office at the annual convention, are (l. to r.) John Dube, Alco Valve Co., treasurer; Frank Faust, General Electric Central Air Conditioning Div., second vice president; John H. Fox, Honeywell Controls, Ltd., Canada, first vice president; John Everetts, Jr., Philadelphia consulting engineer, president.

Air Conditioning Draws Larger Rentals In Chicago--

(Continued from Page 1)

money necessary for an air conditioning installation, you can with reasonable security assure a higher occupancy rate than you would maintain should the building not be air conditioned.

"This is substantiated by the fact that in a recent survey, the Chicago Association shows that non-air conditioned buildings were 90.21% occupied, buildings of 25% to 75% air conditioned were 90.90% occupied, while fully air conditioned buildings had an occupancy of 97.25%."

Speaking to owners of existing buildings, he noted that air conditioning is considered a modernization expense because the investment cannot be recaptured within five years.

"The profit return on air conditioning installations would not justify the installation in itself," he further pointed out.

Sheridan reasoned as follows:

"Air conditioning in Chicago commands an additional rental of 85 cents to $1 per sq ft. Operating costs run in an area of 20 cents per sq ft; space devoted to the equipment at 12 cents; and additional real estate taxes amount to 6 cents.

"There remains approximately 47 cents to provide amortization and return on the investment. Using an installed figure of $5 per sq ft, which incidentally is low for a first class installation in Chicago, it would take approximately 16½ years to pay off the investment and to receive a 5½% return on it."

Sheridan also advised owners of existing buildings that time clocks to start and stop ventilation is a good investment. He cited one installation where the cost of the clock and the expense of installation were recaptured within six months in savings on electricity and manpower.

Another speaker, Kenneth R. Jensen of Minneapolis, urged building owners not to be timid about expressing their ideas to architects designing new buildings for them.

"It is my belief," he said, "that the architect should make use of the building manager's knowledge of the operating techniques used throughout the building's lifetime. . . . I would urge that we stand steadfast in our desires to insist upon the use of materials, mechanical installations, and design that can be operated most profitably."

He cited as an example "the well-known fact that an air conditioning compressor of 2,000 tons is less expensive in initial cost than four compressors of 500 tons each. Sometimes in budgeting the building, it seems prudent to buy the single unit at the lesser figure.

"In reality, the purchase of the four smaller units, installed on the line, with the flexibility offered in operation, the safety factor of four to one on mechanical breakdown, and the opportunity afforded for after hour and departmental zoning, can save many times the cost differential."

The Law and Law Breakers, Alike, Keep Cool

LOS ANGELES — The Law, and those who run afoul of it, both end up in "The Cooler" these days, says air conditioning manufacturer Drayer-Hanson in noting a recent trend.

Particularly heavy among shipments leaving the West Coast plant are year-round cooling products destined for such "cops-n-robbers" spots as the new Santa Barbara (Calif.) Police Facilities building; Illinois State Penitentiary, Joliet; the detention facility, Northern California Reception Center and Clinic, Perkins.

Also, the new Police Academy building, Albany, N. Y., and the 10-structured Ventura School for Girls, Oxnard, Calif.

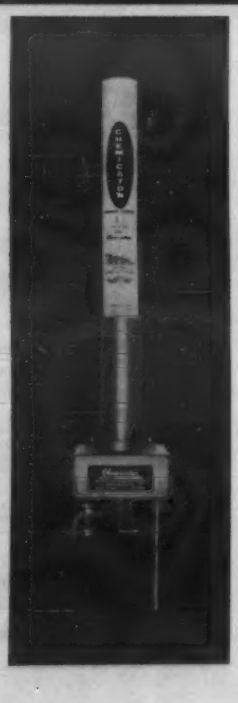
Earlier in the year, Drayer jobs became operative at Daytona Police Dept. and Jail, Daytona Beach, Fla.; Los Angeles Juvenile Home and SA-1 Foothill Police Station, both Los Angeles; and, at Marietta, Ga., the new police station.

Ventil-Aire Rescinds Vacation Schedule

BROOKLYN — Ventil-Aire Corp. has rescinded its previously announced vacation schedule as listed on page 33.

Arnold S. Ross, vice president in charge of engineering, advised the NEWS that due to the large volume of sales occurring right now, employes vacations will be staggered and the plant and office will remain open.

"This is the first time this has occurred in five years," Ross said.



MASTER OF THE SQUEEZE PLAY

When scale takes over in your cooling system, it's only a matter of time until your recirculating water is reduced to a mere drip.

This means trouble. Unless the water in your cooling system is chemically treated the odds are 10 to 1 that scale has already started the squeeze play. Besides reducing the flow of water in pipes scale is an effective insulator, and JUST 1/16 of an inch of scale can reduce heat-exchange efficiency by 50%.

This means high operating cost. The modern way to prevent scale is with the revolutionary new Chemicator.

- Chemicator eliminates the need for periodic descaling, which eats away metal piping, is costly and inconvenient.
- Chemicator automatically prevents scale and corrosion, kills algae and fungus in your cooling tower or evaporative condenser in units of 5 to 300 tons.
- Chemicator is simple in design — inexpensive to install and operate — ready to perform a lifetime of trouble free service.

**Distributed locally in many areas.*

Write for 12-page illustrated brochure.

Chemicator

CHEMICATOR DIVISION - ERLEN PRODUCTS CO.

700 SO. FLOWER STREET, BURBANK, CALIFORNIA

Italian ASHRAE Meeting Draws 300 Europeans

MILAN, Italy — Problems of atmospheric pollution and a study of new air conditioning and refrigerating plants installed in Italy during 1960 were discussed at the second air conditioning international meeting sponsored by the Italian Branch of the American Society of Heating, Refrigerating & Air-Conditioning Engineers.

A report on the meeting, which was held March 1-3 at the Cicogna Hall at the Milan International Fair grounds, was recently received by the NEWS.

The meeting was held in connection with the Second International Thermo-Hydrosanitary Exhibition which ran from March 1 to 7. Some 12,000 persons passed through the turnstiles to see the wares of 85 exhibitors, it was reported.

The air conditioning meeting was attended by 300 persons from several European countries including official delegations from the Swiss ASHRAE group, the Association pour la Prevention de la Pollution Atmospherique and the Centre d'Information pour le Developpement du Conditionnement d'Air et du Depoussierage from France. Thomas Urdahl was the official representative of ASHRAE.

Themes of the three sessions were (1) the air conditioning and ventilation contribution to the defense against air pollution, (2) new heating systems, methods, and equipment which contribute to the campaign against atmospheric pollution, and (3) air conditioning and refrigerating plants installed in Italy in 1960.

As part of the program, engineers were taken on visits to the air conditioning plant in the Pirelli skyscraper and to the industrial air conditioning system in Siemen's San Siro factory.

President of the Italian ASHRAE is Gian Felice Bertolini. He was also president of the meeting. Other meeting officers were R. Goerg, president of the ASHRAE Swiss group, vice president; G. Levantal of APPA, vice president; P. Lasserre, technical manager of CICAD, vice president; E. Gherarducci, technical secretary; and Dr. G. du Bot, general secretary.

MacNichol Joins Bell & Gossett

MORTON GROVE, Ill.—Newton W. MacNichol has joined Bell & Gossett Co. as a special field representative for heating and cooling products in the company's Eastern Div., it was announced by Ralph A. Patterson, vice president.

MacNichol

Formerly general sales manager for Warren Webster & Co., MacNichol will cover field calls in the territory assigned to the Eastern Div., with headquarters in New York City.

Plant Vacation Schedule

Shutdowns Starting Aug. 12 or Earlier

Company	Shutdown Period Plant	Shutdown Period Office	Shipments From Plant
Mears Controls, Inc., Beaverton, Ore.	7/22-8/7	Open	None
McCray Refrigerator Co., Inc., Kendallville, Ind.	7/27-8/6	7/27-8/6	Limited
F. J. Stokes Corp., Philadelphia	7/31-8/13	Open	Emergency, Stock Only
Ventil-Aire Corp., Brooklyn	7/31-8/6	8/7 -8/13	Regular
Gaffers & Sattler, Div. of Utility Appliance Corp., Los Angeles	8/1 -8/15	Open	Emergency
Acme Industries, Inc., Jackson, Mich.	8/5 -8/20	8/5 -8/20	Emergency
American Air Filter Co., Reed Div., Louisville	8/5 -8/20		Emergency
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.	8/5 -8/20	Open	Stock Only
Day & Night Mfg. Co., La Puente, Calif.	8/5 -8/27	Open	Regular*
	*No shipments Aug. 27 only		
Penn Brass & Copper Co., Erie, Pa.	8/5 -8/20	8/5 -8/20	Stock Only
Viking Copper Tube Co., Cleveland	8/5 -8/20	Open	Regular

Company	Shutdown Period Plant	Shutdown Period Office	Shipments From Plant
Albion Div., McGraw-Edison Co., Albion, Mich.	8/6 -8/13	Open	Regular
A. O. Smith Corp., Tripp City, Ohio	8/6 -8/20	8/6 -8/20	Emergency
Connor Engineering Co., Danbury, Conn.	8/7 -8/13		None
Controls Co. of America, Milwaukee	8/7 -8/11	Open	None
General Electric Co., Central Air Conditioners, Tyler Texas	8/7 -8/20	8/7 -8/20	Regular
Tecumseh Products Co., Tecumseh, Mich.	8/7 -8/20	Open	Regular
Marion, Ohio	8/7 -8/27	Open	Regular
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.	8/7 -8/12	8/7 -8/12	Skeleton Crew
Wilson Refrigeration, Inc., Div. of Tyler Refrigeration Corp., Smyrna, Del.	8/7 -8/11	8/7 -8/11	Stock Only
Copeland Refrigeration Corp., Sidney, Ohio	8/12-8/27	8/12-8/27	Emergency
Kenmore Machine Products, Inc., Lyons, N. Y.	8/12-8/27	8/12-8/27	Emergency

when you buy
SPORLAN Refrigerant Distributors
with the Versatile Interchangeable Nozzle...

The distributor nozzle orifice is the key factor in creating the necessary velocity and turbulence to maintain a homogeneous mixture of liquid and vapor for equal distribution to all circuits of the evaporator.

Provides the desired flexibility to handle variations in evaporator applications . . . changes in load, temperature and refrigerants.

Distributor may be installed in any position.

Permits simplified inspection of solder joints and connecting tubing from distributor to evaporator.

Sporlan Refrigerant Distributors available in any combination of circuits and capacities . . . flare, sweat or flange connections . . . brass, steel or aluminum bodies.

And only the Sporlan line offers brass body distributors with auxiliary side connections developed especially for hot gas defrost, hot gas by-pass and reverse cycle (heat pump) applications.

Get all the facts, *write for Bulletin 20-10.*

SPORLAN VALVE COMPANY
7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI
EXPORT DEPT. 85 BROAD STREET NEW YORK 4, N. Y.

TECH CENTER

by
FRANK J. VERSAGI

Certification Programs: Pro & Con

How desirable are certification programs for the air conditioning industry? Are such programs even necessary? Is there a different need between room air conditioners and unitary equipment? Have the existing programs shown any real effectiveness?

These are the questions being discussed in the cooling industry. Discussion has increased since recent NEWS stores have indicated that the Federal Housing Administration has made ARI certification, or equivalent, a condition for FHA approval on units to be installed in FHA insured houses. There are those who feel that ARI's certification program compares unfavorably with NEMA's program for room units. Some want a stronger program; others feel there is no need for a certification program on central air conditioners as there is for plug-in appliances like room units.

Some of the grumbling is political, rather than technical. Complaints that "ARI is more concerned with its own immortality than with realistic standards," and that "The charge of $1 per shipped unit is a form of blackmail," are mentioned here just to get them out of the way. No program of self-policing has ever met with universal approval in any industry.

What we present here are those technical objections which question the need for certification and cast doubt on the efficacy of existing programs.

Certification Results In Consumer Confidence

As clearly defined by American Standards Assn. (See Box), a certification program has the effect of giving consumers greater confidence in the equipment or service they purchase.

The famous Good Housekeeping Seal of Approval is, in effect, a certification program. A product, to carry that seal, must have been tested in the laboratories of *Good Housekeeping*. (Although it is also necessary to schedule a certain amount of advertising to get the Good housekeeping seal, the laboratories have been known to refuse the seal to products which did not pass their tests).

ASA's standard for certification procedures is the touchstone, the reference point, against which all certification programs are compared. To the degree that they meet ASA's requirement, they gain prestige and reliability; many programs go so far as to affiliate with ASA in order to be able to use its certification mark in conjunction with their own.

Adequate sampling, both in number and quality, and sufficient policing form the core around which a reliable certification program is built.

"There are over 50 manufacturers producing over 1,500 models of unitary equipment," point out some critics of ARI's program. "With only one testing laboratory operating in the program, it becomes a physical impossibility to test more than a tiny percentage of the units. Since the chances of getting caught with an erroneous rating are so small, companies can risk overrating a unit with relative impunity."

Inevitably, in discussions with the NEWS, such critics compare the ARI program with NEMA's room unit program. The NEMA program contemplates that 50 to 75% of the models will be tested during each year under the new program which uses six or seven laboratories, some on the premises of the participating members.

"With chances of having a model tested so high, it does not pay to risk overrating in the hope of getting by," is the feeling. (At this writing, ARI is considering the step of going to a similar setup—using testing facilities of member companies to supplement the independent testing laboratory.)

How much testing is being

American Standard Practice for Certification Procedures

ASA issued in 1947 a standard dealing with certification procedures which is still the reference point for all certification programs, even those which do not officially associate themselves with ASA or seek to use the association's certification mark. Of primary interest in the current discussion of certification in the air conditioning industry are the following abstracts.

FOREWORD—"Approved," "certified," "tested," and similar terms have often been used to convey the idea to the purchaser that the goods or services have been inspected, tested, and certified by some agency of competence . . . and that they may be purchased with more than ordinary assurance that certain standards of quality have been met.

SECTION 2— . . . based on adequate and independent sampling and examination by an impartial and competent agency.

SECTION 6— . . . sampling and examination be recurring, periodic, systematic, and adequate in extent. Sampling for re-examination shall be done independently by the agency issuing the report of examination.

In a later bulletin, 1950, ASA discussed further the procedures to be followed before the association's certification mark could be used. Of interest are these portions.

2(e) The details of the proposed certification and labeling procedure, including policing, with samples of the labeling proposed to be used . . . shall be provided.

2(h) An estimate of the number of particular units in each commodity classification to be certified under the plan during any specified period.

7—The plan as indicated above must provide means for adjudication of disputes concerning non-conformity to the plan or the standard or improper use of the certification mark.

Mr. Jeff Gilham, Mechanical contractor for Central National Bank, Richmond, Virginia, says:

"Honeywell gave this electric expert service

Mr. Jeff Gilham, at left, in the main area of the Chamberlayne Avenue Branch, Central National Bank. With Mr. Gilham is R. Branson Hobbs, Assistant Cashier and Manager of the branch.

done? The goal, the NEWS learned, is to "test at least one model of each participating member during each test period." A test period is nominally a year. Checking with Electrical Testing Laboratories, New York City, the independent group which performs the tests for ARI, the NEWS learned that each test consumes 100 man-hours, that ETL has tested "sixty or seventy" units since the ARI program was begun.

How Effective Has Testing Been?

How effective has the testing been? An ARI spokesman states flatly that the testing has had the effect intended, "Ratings already are becoming more realistic, as can be determined by comparing earlier issues of the certification directory with the latest one."

Admittedly, the NEWS was told, it would be desirable to increase the number of units tested. "But unitary equipment is not the same as plug-in appliances. The physical and financial burden of testing as extensive as for room units would be impossible of practical accomplishment." The group is considering a higher rate of testing, but asks "Where do we draw the line? 100% testing, 50% testing, 10%?"

E. J. Gmoser, supervisor of appliance testing for ETL, stated that, in his opinion, the ARI program hews quite closely to ASA requirements. "Practically speaking," Gmoser continues, "I believe the sampling rate is adequate for the purpose intended. The ARI certification program is quite comparable in its effect to the programs of other industries."

What happens when a unit doesn't meet the rating claimed for it?

"ARI is notified," states the ETL supervisor, "and they give the manufacturer time to visit the laboratories while the unit is still in test position. The manufacturer may make minor adjustments or correct small items, so long as—in the judgment of ARI—he does not alter the unit in a basic sense. It is ARI which decides what to do then if the unit still fails to meet the published rating."

'Not Sufficiently Stringent,' Some Critics Complain

There have been complaints from some in the industry that the policing of the certification program is not sufficiently stringent, that "If a unit doesn't pass, it goes back and forth a dozen times until it does pass," that no certification has ever been revoked. It is true, the NEWS found, that no company has been dropped from the directory, but we were unable to document any instances of prolonged testing and alteration as implied in this criticism.

More Realistic Ratings

Repeatedly, proponents of ARI's certification program cite the fact that ratings are now more realistic than when the program began more than two years ago. "This reappraisal of ratings didn't come about in a vacuum," they insist, "it's the result of the sampling and testing which is going on right now."

Either ARI or ETL, with a document authorizing acquisition of a particular model number, travels to any distributor in the country and draws a sample unit out of normal stock. "Units for test are selected from the open market by the ARI chief engineer," is the way the sampling procedure is stated in ARI's program, section C.

Perhaps the most forceful objection offered to ARI's program is the objection that the very idea of certification for unitary equipment is unnecessary and unrealistic. This argument usually has two facets:

First, it is said, that there had been no gross misrepresentation of the capacities of central units as there had been with room units. "Ratings have been realistic and essentially truthful on central equipment."

Second, the unit is not applied as is a room unit. "You don't plug a central unit in; you *install* it. And the best unit in the world can be installed so as to give less than optimum performance." (Incidentally, the NEWS has seen data which indicate that the average installed central air conditioner delivers to the living space only about 0.7 of the capacity which can be measured at the unit itself.)

Suggest Certification Include Installation

This group advocates, instead of unitary certification, a Silver Shield-like program for central air conditioning. "After all, the Silver Shield program takes into account the entire installed system; it assures adequate performance of not only the firing unit, but the air handling system, the controls. That kind of program would have merit in cooling, because it is the *installation of equipment*, not the equipment itself which is at fault in unsatisfactory applications."

Proponents of the present certification program do not necessarily disagree with the concept of a quality control program for total installations, but they see unit certification as a necessary first step.

Anemostat Moves Into New Quarters

NEW YORK CITY — Dynamics Corp. of America announced that its Anemostat Corp. subsidiary has moved into a modern, 165,000-sq ft "expandable" plant at Scranton, Pa.

Expected to be in production by Oct. 1, with employment of approximately 300, the single-story plant will bring together under one roof Anemostat research, development, and production programs, permitting "a continuous flow, from drawing board to final assembly, of our air conditioning, heating, and ventilating equipment for commercial and industrial buildings," R. F. Kelley, DCA president, stated.

Present Anemostat production is spread out over ten floors in two buildings in Hartford, Conn.

"The company's improved facilities will include an ultra-modern testing laboratory, now under construction," it was pointed out. "Occupying less than four acres of its 27-acre plot, the new Anemostat plant can be readily expanded as production requirements dictate."

Anemostat President C. T. Roff will make his headquarters at the company's new Scranton facility. The company's Hartford plant will operate concurrently for several months "to minimize sales and distribution disruptions," it was stated. Key personnel will move to the Scranton plant.

temperature control job and attention."

ARCHITECT: *Merrill C. Lee, Richmond*
CONSULTING ENGINEERS: *Hankins & Anderson, Richmond*
MECHANICAL CONTRACTOR: *Horace S. Flournoy, Richmond*

This air conditioning system has Honeywell programmed controls which maintain desired temperatures that conform to the bank's working schedule.

"In a climate like Richmond's, there's no doubt about the need for air conditioning," said Mr. Gilham. "But by the same token we have many mild months through the fall and winter when our weather is cooler. The engineers considered all these factors and specified Honeywell for a smooth-working control set-up. This balanced Honeywell control system gives year 'round comfort plus mild weather economy."

The air conditioning system in the bank is one that employs interlocking Honeywell controls. These controls are preset to maintain a temperature level that matches the working hours of the bank. Employees and customers both enjoy this pre-planned comfort.

You get more to work with when you work with Honeywell. Easily installed controls, accurate specifications, prompt delivery and excellent supervision are the advantages enjoyed by every contractor with Honeywell on his team. And, only Honeywell makes all three types of control systems—pneumatic, electric and electronic. There are 112 conveniently located Honeywell offices across the nation. Call your local one for details. Or, write Honeywell, Dept. AN-7-157, Minneapolis 8, Minnesota.

Mr. Hobbs inspects one of the Honeywell thermostats used throughout the bank. Only Honeywell makes all three types of control systems—pneumatic, electric and electronic.

Honeywell

First in Control

SINCE 1885

HONEYWELL INTERNATIONAL
Sales and service offices in all principal cities of the world. Manufacturing in the United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

Distributor's Schools Designed To Upgrade Work of Commercial Air Conditioning Dealers

Success of $7,000 Investment Brings Plan for More

By George M. Hanning

CLEVELAND — During the past year, Refrigeration Sales Corp., Carrier distributor here, has spent more than $7,000 on dealer training.

The company conducted two sales and engineering schools, a spring service school, a course on fundamentals of refrigeration, a course on basic electricity and controls, and a business management seminar.

In all, more than 6,900 man hours of instruction were provided for dealer sales, engineering, and service personnel, plus a scattering of city refrigeration inspectors, utility people, independent servicemen, and Carrier regional office personnel.

Did this massive educational effort pay off? Definitely, claim Refrigeration Sales officials. So much so that another series of schools for next fall and winter are already in the planning stage.

Hap Farr, son of company president Warren Farr and instructor in the sales and engineering schools (along with sales manager Douglas Higginbotham), commented that the aim of these schools was to upgrade the work of the dealers, who are largely in the commercial air conditioning field.

"Our dealers cannot stand up and sell price," he noted. "They have to sell dollar value. It was the aim of our schools to help them do that.

Looking for Savings In Long Run

"We are also helping the dealer by enabling him to go out and do his own engineering. In this, we are also helping ourselves. In the long run, it will save us money if we don't have to do the dealer's engineering for him. We want a small number of dealers who are self-sufficient."

Ralph Wilkins, service manager, who conducted the service schools, looks at them in the same manner.

"It helps the dealer tremendously when his serviceman knows what he is doing and can move in and service a job with confidence. He gains respect in the eyes of his customer when he can handle trouble without calling in a factory man.

"We notice, too, that men trained in our schools, rarely have any troubles to report when we call on them. They understand their products better. All of this saves my time and the company's money."

All but one of last season's schools were conducted in an upstairs classroom at Refrigeration Sales Corp.'s headquarters at 701 St. Clair N.E. in downtown Cleveland. The one, the business management seminar, was staged in a nearby hotel.

The company's downtown location, incidentally, contributed significantly to the cost of the schools. Only public parking space is available and Refrigeration Sales picked up the tab for parking checks. On evenings when functions were being held at the Civic Auditorium, not far away, parking charges came high.

Classroom Seats About 50 Persons

The classroom is a former store room measuring 40 ft by 42 ft. This provides ample room for seating approximately 50

CARRIER SERVICEMAN CENSUS

DATE.....

SERVICEMAN'S NAME .....AGE.....

HOME ADDRESS .....PHONE .....

EMPLOYED BY .....POSITION.....

ADDRESS .....HOBBIES .....

EXPERIENCE

1. How many total years experience have you had in our industry .....
2. Positions held: a. .... Salesman — Number of years.....
   b. .... Serviceman — Number of years.....
   c. .... Installation — Number of years.....
   *d. .... Other — Number of years.....
   *Describe .....
3. As installation and/or serviceman, on what type of equipment have you had your experience:
   a. .... Household Refrigerators
   b. .... Food Freezers
   c. .... Room Air Conditioners
   d. .... Commercial Fixtures
   e. .... Store-Type Air Cond.
   f. .... Central System Air Cond.
   g. .... Water Chillers
   h. .... Water-Saving (towers-evaps.)
   i. .... Heat Pumps
   j. .... Furnaces & Heating
   k. .... Ice Makers
   *l. .... Other
   *Describe.....
4. What other trade or professional experience, related to our industry such as: electrical, plumbing, building, etc. have you had:
   .....

TRAINING

1. What type of formal service training have you had: (pls. show date, if possible)

School	Carrier Sponsored	Other Mfg.	Trade School	Corres.	Other
a. Fundamentals of Refrigeration	.....	.....	.....	.....	.....
b. Fundamentals of Electricity	.....	.....	.....	.....	.....
c. Fundamentals of Air Cond'g	.....	.....	.....	.....	.....
d. Room Air Conditioners	.....	.....	.....	.....	.....
e. Store & Residential Air Cond'g	.....	.....	.....	.....	.....
f. Central System Air Cond'g	.....	.....	.....	.....	.....
g. Water Chilling Equipment	.....	.....	.....	.....	.....
h. Heat Pump	.....	.....	.....	.....	.....
i. Ice Makers	.....	.....	.....	.....	.....
j. Heating	.....	.....	.....	.....	.....
k. Other	.....	.....	.....	.....	.....

2. What types of additional service training do you feel would be most beneficial to you:
   .....
3. Do you belong to any educational or professional societies; such as R.S.E.S., A.S.H.R.A.E., etc.: .....

COMMENTS OR SUGGESTIONS

.....

SERVICEMAN census form on which students indicated their backgrounds, experience, training accomplished, and additional training desired. School programs are set up based on information obtained from this form.

SCORE.....

NAME .....

COMPANY.....

WRITTEN EXAM — CHAP. VI

Fundamentals of Refrig.

1. The two dividing points in a closed-cycle refrigerating system, are the ..... valve, and the .....
2. A system using Refrigerant-22 and a Thermostatic Expansion Valve has a normal operating suction pressure of 62 psig. The vapor temperature at the expansion valve bulb location is 48°F. — What would be the superheat setting of this valve? ..... degrees F.
3. Name five of the six most common refrigerant metering devices:
   ....
   ....
   ....
4. An overcharge of refrigerant in a system using a Capillary Tube type of metering device will cause high operating suction pressures, and possible "flood back" of liquid refrigerant to the compressor.
   TRUE..... FALSE.....
5. How many pressures control the action of an Automatic Expansion Valve? .....
   How many pressures control the action of a Thermostatic Expansion Valve? .....
6. External Equalizing types of Thermostatic Expansion Valves are recommended where a large .... is present in an evaporator.

TYPICAL PAGE from one of Wilkins' written examinations. Examinations usually covered two pages and contained from 10 to 20 questions. Students were given 15 to 20 minutes to complete the examination.

MINIMUM INVENTORY—GENEROUS PROFITS

Service Air Conditioning Controls with Identical Parts Used in Original Equipment

Only 20 starting relay kits will replace 355 various items.
Only 19 control relay kits will replace 142 various relays, contactors, controllers.
Same-day-shipment on parts ordered from RBM Chicago warehouse.
RBM
Start

NOW! GENUINE

RBM REPLACEMENT KITS

For the first time, RBM offers kits for direct replacement of the magnetic controls it has engineered and built as original equipment for all major air conditioning manufacturers. Their requirements have been consolidated into a few replacement kits. This, plus same-day-shipment of orders from the Chicago warehouse stocks, keeps your inventory down. Because RBM original equipment and replacement controls are manufactured on high volume production lines, costs are low . . . and you benefit from the saving in generous profit margins.

Wholesalers . . . be sure and ask for a free supply of the new RBM pocket size *REPLACEMENT KIT BROCHURE.* Your customers will appreciate them.

Order your replacement kits from our Chicago Warehouse, 3501 W. Addison, Chicago 18, Illinois.

RBM QUALITY — *For technical information write or phone:*

RBM Controls Division

Logansport, Indiana

FACTORIES: North Manchester and Logansport, Indiana

SPECIAL DELIVERY BY ROCKET?

No. we aren't using the new ballistic missiles yet, but maybe some day. In the meantime, Harry Alter gives you the fastest possible service. Your orders are handled with *careful* speed. Complete inventories and streamlined methods assure truly snappy service.

We're Real Specialists in

REFRIGERATION • AIR CONDITIONING • ELECTRIC MOTORS

SUPPLIES and PARTS

SAVE MONEY, time and effort by ordering from our new *Dependabook*, the most complete catalog of all. 250 pages. Over 10,000 items carried in stock. *Wholesale only.* Your orders filled really fast by mail, or they can be picked up at one of our six big warehouses.

Write on your letterhead for the 1961 DEPENDABOOK . . .
Also our monthly Flyer of surplus and close-out Bargains.

THE HARRY ALTER CO., INC.

1717 S. Wabash Av. Chicago 16, Ill.	134 Lafayette St. New York 13, N.Y.	2332 Irving Blvd. Dallas 7, Texas	695 Stewart Ave., S.W. Atlanta 10, Ga.

FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

persons at row tables. It still leaves room for a buffet line along one wall and a registration desk near the entrance.

Converting the room and outfitting it for classroom use cost Refrigeration Sales more than $1,000, even though furnishings were of the simplest. Cost included adding heat and more electrical wiring.

Among the training aids procured are a Dukane projector, a movie screen, blackboard, a 5-ft demonstration slide rule, and a demonstration air handling setup including a fan-coil unit, ductwork, registers, and diffusers.

Other aids consisted of a peg board for mounting wiring circuits and parts, a flip chart for chalk drawings, microphone, public address system, and a 2 by 2-in. slide projector.

Could Work Full Day And Go To School

Explaining the routine for the service schools, Wilkins said that the servicemen were invited to come to school "as you are" and have supper there. Catered by distributor personnel, buffet supper was served starting about 6 p.m.

Thus the servicemen could work a full day and go right to the school from the job. Out-of-town servicemen had time to make the trip to Cleveland without fear of missing their evening meal.

During the supper hour, each man registered. Re-registration was required for every session. This gave the company a complete and accurate record of all who attended each session.

From the registration cards, Wilkins was able to check up on those who failed to attend class. This served a dual purpose, he observed.

First, it indicated that the distributor was really interested in seeing that the serviceman maintained his attendance. Second, because there were always more who wanted to attend than could be accommodated, it enabled the company to bring in other men to replace drop-outs.

Very Few Dropouts

There were very few dropouts, Wilkins noted. Between 80 and 90% of the registrants attended all sessions.

By 7 p.m., class work began. Sessions ran for three hours and were dismissed promptly so that even those with the furthest distance to travel could be home at a reasonable hour. Final event was a drawing for a door prize.

Because most of the men indicated they wanted more basic training—even though they had attended numerous factory and distributor schools before—instruction was concentrated in this area.

Instruction was based on Carrier slide films. Films were shown in short sequences. At the end of each sequence, Wilkins stopped the film. Each slide was discussed and questions answered. Then the next sequence was shown.

During the final 15 minutes to 20 minutes of the session, Wilkins gave the men a written examination on the subject matter covered. He made up the examinations himself to include true and false statements, multiple choice answers, and filling in blanks to complete statements.

Straightforward Exams

"The examinations were always straightforward," he said. "I didn't put in any trick questions. However, while the questions were basic, they were not always easy and the student would have to look sharp to detect false statements."

As an example take these two questions from an examination on basic refrigeration theory.

"16. ..... Btu are necessary to change 1 lb of 212°F water to 212°F vapor.

"17. Referring to question 16: The answer is the Latent Heat of Vaporization and is the quantity of heat removed from water to change its state from a liquid to a vapor. Is this statement TRUE or FALSE?

Read carelessly, the statement would appear to be true. But it is false. Key phrase is "removed from," which should be "added to."

"I wondered at first if the men would shy away from the tests and possibly resent them," Wilkins commented. "But I soon found that they actually liked to be tested and looked forward to the examination. It was a challenge to them.

"It was also a challenge to me. If I found that very many students were missing the same question, it indicated that I had not explained the subject sufficiently."

Wilkins corrected papers between sessions and returned them to the students at the beginning of the next class period. The test was then discussed and questions that proved difficult were clarified.

While most of the classroom work was done through films and discussion, the men were given factory-supplied manuals covering the subject of the course.

These were not read in class, but referred to enough to get the men familiar with their contents. The servicemen were encouraged to read them more thoroughly on their own and use them in their work.

At the final session of the second service school last January, Wilkins devoted the entire period to a practical exercise in the use of diagnostic procedures, based on the subject matter presented in previous sessions.

A refrigeration cycle demonstration unit was arranged on a large table and a number of normal service problems were induced into the system.

These problems consisted of a blocked air-cooled condenser, air in the system, refrigerant leak, shortage of refrigerant, partially restricted expansion valve inlet screen, and low-pressure switch out of calibration.

The class was given information about the proper operating characteristics of the unit, including normal operating suction and discharge pressures, superheat, low-pressure switch settings, compressor amperage draw, etc. A service history was outlined that would coincide with the present problems in the system.

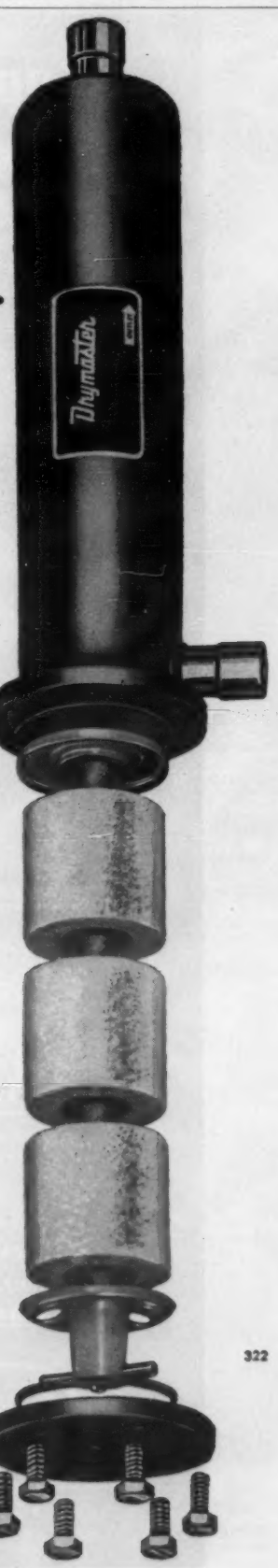
When the class agreed on a step in diagnosing the problems, the instructor followed instructions from the class to perform the step. By progression each of the difficulties in the unit were found and corrected until all operating conditions were again normal.

Thus, from their performance in class plus the results of their examinations, Wilkins believes students who attended all sessions—or possibly who missed only one session—derived considerable benefit from the courses. To these students, at the end of each course, Refrigeration Sales presented a certificate of completion.

Appeal of these courses to dealer servicemen, Wilkins said, is well attested. So many turned

(Continued on next page)

UNSURPASSED FILTERING AND DRYING with ADDED Convenience and Economy... It's the New Refillable Type Drymaster® Filter-Drier!



The superb, balanced filtering and drying performance of the new refillable type DRYMASTER comes from HI-FI Filter Block Desiccant: These fully activated, pressure molded briquettes quickly remove all harmful moisture, acid, sludge and micron-size foreign particles from the refrigeration system. HI-FI Filter Block Dessicant is non-dusting, non-channeling and is virtually unequalled in moisture adsorbing capacity. Its combination surface and internal depth filtering ability is unsurpassed by any other comparably sized drier in the field today.

And the new angle-type, refillable DRYMASTER Filter-Drier gives added convenience and economy, too. Once installed, the body shell of the Drier is in for the life of the system; only the desiccant is replaced. DRYMASTER Refillable Filter-Driers are designed for 5 ton through 165 ton capacities with ½" O.D. through 2⅛" O.D. solder connections. End fittings are made of copper for easier soldering.

HI-FI Desiccant Briquettes, protected against shock by fibre glass padding, come packed in vacuum sealed cans ready to be installed quickly, easily, with no connections or joints to remake.

Write today for Catalog R-159 . . . contains complete information on all Streamline Refrigeration and Air-Conditioning products.

322

MUELLER BRASS CO.
PORT HURON 13, MICHIGAN
VAMPCO ALUMINUM PRODUCTS, LTD., STRATHROY, ONTARIO
Exclusive Canadian Representative for Mueller Brass Co.
Air Conditioning and Refrigeration Products

Distributor's Training School--

(Continued from preceding page)
out for the first school meeting that the course had to be divided into two sessions. Average attendance of 87% was maintained for the three weeks, it was held.

Men Want Training In the Basics

The first three-week course in the spring of 1960 was confined to the basic theory of refrigeration, the refrigeration cycle, and the function of the compressor.

At the end of the course, the men were questioned on what type of training they wanted in future schools. Basics was far out in front in the poll. They were also queried on what nights they preferred for school. Tuesday and Wednesday proved to be most popular.

So the second school last fall was devoted to the fundamentals of refrigeration. This school, too, was divided into double sessions to meet the demand and ran for seven weeks.

It covered such subjects as definitions, refrigeration cycle, compressors, condenser - receivers, refrigerant characteristics, metering devices and expansion valves, evaporators, basic cycle controls, and moisture.

Attendance average 38 men per evening and a total of 117 students attended some or all of the sessions.

A third service school was conducted this spring on basic electricity and controls. It ran for five meetings. Again double sessions were held to accommodate the demand. Attendance averaged 45 men per session.

Program subject matter was derived mainly from Minneapolis-Honeywell's handbook on "Basic Electricity" with supplementary material taken from other sources, including NEWS editor Frank Versagi's series on the subject. Carrier's booklet on "Compressor Time Delay Starting Circuit" was a prime source of control information.

In addition, Wilkins mimeographed material on calculating electrical resistances, capacitor theory, testing, and calculating. These sheets were passed out to students for study and information.

An electrical wiring board was used to demonstrate wiring connections, simple electrical circuits, lock-out relay circuits, capacitor testing, and other basic electrical demonstrations.

Carrier slide films on "Capacitor Start Motors" and "Capacitor Start Motor Testing" were shown plus a film on various electrical and temperature test instruments loaned by the Simpson Electric Co.

Minneapolis-Honeywell Representatives Aided

At the final session, two Minneapolis-Honeywell representatives took over the program to cover residential and commercial control systems.

For this school, 79 men earned completion certificates by attending four of the five sessions. Along with an official-looking Carrier training certificate, Refrigeration Sales mailed each student a letter thanking him for his participation.

"While a certificate might be classified as just another bit of paper," the letter stated, "you can be proud of the effort and time you have devoted to upgrading your knowledge in the pursuit of rendering the type of service our industry needs."

As an extra bonus, the letter included the recipe for the tasty "Sloppy Joes" that proved so popular at the supper hour.

While the format of the service schools has remained fairly constant, that of the sales and engineering schools underwent considerable change between 1960 and 1961.

The first school followed the pattern of the service school. Dealers and their salesmen and engineers were invited to a buffet supper at 6 p.m. Class work started at 7 p.m. and continued through 10:20 p.m. About one third of the time was spent on sales training and the other two thirds on engineering.

Though classes were smaller, averaging about 31 students per session, double sessions were held on Wednesday and Thursday evenings. The course continued through seven sessions, generally a week apart, though two of the sessions were separated by a two-week interval.

Subject material for the sales portion of the meetings was taken from Carrier's "Plan for Selling," while the engineering material was derived from that company's "Air Conditioning Fundamentals" slide film series.

This course attracted local dealers largely. After it was completed, Refrigeration Sales put on the same course for out-of-town dealers, telescoping it into a two-day affair. Students attended a full day and evening, put up at a nearby hotel overnight, and started work again early the next morning.

Both these formats were abandoned this year. Instead, to allow more detailed discussion of each subject, Refrigeration Sales conducted eight full-day sessions separated by a two-week interval. A separate subject was covered in each session.

Schedule of Subjects

These included psychrometrics, duct design, room air distribution, commercial load estimating, water and refrigeration piping, understanding wiring diagrams, heat pumps, and understanding air-cooled equipment.

The daily schedule ran as follows:

8:30 to 9 a.m.—Review of home work problem from previous session.

9 to 9:30 a.m.—Study of slide rule.

9:30 to 11 a.m.—Engineering presentation.

11 to 12 noon—Sales presentation.

12 to 1 p.m.—Lunch.

1 to 4:30 p.m.—Engineering presentation.

Lunch was furnished by Refrigeration Sales, and coffee and cokes were provided during breaks.

For this school, a $20 registration fee was charged to dealers. This revenue, however, offset less than half of the expense of conducting the school.

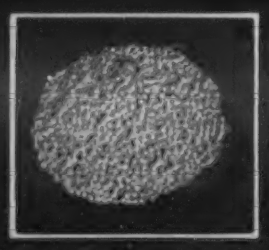
During the sales portion of the meeting, students covered the Weathermaker Handbook chapter by chapter. Carrier's design manual formed the heart of the engineering presentation, although many mimeographed hand-out problems and work papers were originated with Refrigeration Sales.

Pattern of instruction for the engineering portion of the school was to cover the text material during the morning session. In the afternoon session, the class would work out a problem together. Then students would work out another problem indi-

Super-Dry Refrigerants with today's highest capacity desiccant

—LINDE MOLECULAR SIEVES

Magnified 50,000,000X, a molecule of the original synthetic zeolite



Molecular Sieves in bead form—widely used in refrigeration

Seven years of field experience and research have given LINDE undisputed leadership in adsorption technology—through development of uniform, high capacity, high strength, high bulk density Molecular Sieves—the first synthetic crystalline adsorbents.

LINDE now has available **new hard bead** desiccants . . . with greater-than-ever particle strength for refrigeration systems . . . . specifically designed to eliminate freeze-up and corrosion.

Today, the vast majority of original equipment manufacturers and replacement cartridge suppliers look to LINDE—not only for materials "tailored" to rigid specifications—but for dependable technical service on all problems of static and dynamic desiccation.

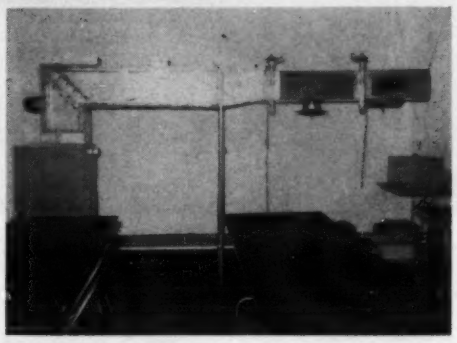
For samples and full information on proven applications, write: Dept. AC-072, Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. **In Canada:** Union Carbide Canada Limited, Linde Gases Division, Toronto 12.

Linde MOLECULAR SIEVES

The Original Synthetic Zeolite (Patented)

UNION CARBIDE

HAP FARR conducts engineering class for Refrigeration Sales Corp., Cleveland. Classroom on second floor of distributorship is outfitted with blackboard, public address system, movie screen, plastic tube evaporator, and other training aids.



AIR DISTRIBUTION demonstrator consists of fan-coil unit (l.) hooked to duct with transparent side and ending in two different size grilles and diffusers. Center section can be changed to set up varying air flow problems.

vidually. Their solutions would be discussed in class. Then homework problems would be assigned to be completed and turned in at the next session.

"We found that the engineers will work hard on a home work problem if it is basically the same as the problems done in class. But, if it proves too difficult or too easy, they won't bother," Hap Farr commented.

Prizes to Most Conscientious

At the end of the course, Refrigeration Sales rewarded those most conscientious with their home work with such prizes as flashlights and thermometers.

An important training aid for this course was a home-made air distribution system. It consists of a fan-coil unit hooked up to a glass-paneled duct. The duct contains turning vanes and dampers and feeds into two different sizes of registers and diffusers, so that the use and value of each can be demonstrated.

The center section of this duct is removable so that alternate sections can be inserted to simulate different problems and conditions.

Also connected with the fan-coil unit is a round duct leading to a baseboard diffuser to demonstrate that type of distribution system.

With this training aid, Farr noted, he could teach air distribution duct design, system balancing, and static regain. Students were asked to bring their own air measuring instruments with them and were given problems to work out on the model.

One-Day Seminar on Business Management

The one-day business management seminar was handled differently from the training schools.

The seminar was not conducted by Refrigeration Sales personnel, but by a widely-known team of Dr. Emol Fails, D. S. Shepherd, Jr., and H. H. Ziglar, business management consultants from Raleigh, N. C.

Sixty-three dealer principals were invited to attend this seminar. As a result of an intensive direct mail appeal, 62 showed up, indicating the attraction the subject had for them.

The seminar, called "Operating for a Profit" covered such facets of business management as methods of estimating jobs, methods of estimating overhead, effects of overhead on various types of jobs, how to select the most profitable jobs, methods of costing by individual jobs and for the business as a whole, techniques of controlling a job, design and use of proper forms for gathering cost information for management use, motivation of personnel, how to increase productivity, and how to manage the sales force and other personnel.

Dealers Enthusiastic About Seminar

"Word of mouth reports from our dealers on this meeting were excellent," Farr said. "A number of dealers took the trouble to write thank you letters to me to tell me how much they appreciated our making this information available to them."

What's ahead for next year?

While plans have not yet been completed, Farr is considering two more service schools, another engineering school for franchised dealers, and a school for architects, engineers, and engineering personnel of large companies who are doing refrigeration and air conditioning work. This last named school would be pointed toward applied equipment and large systems, he indicated.

Retires Officially on Life-Time Pension

HARRIS SOSIN, center, 67-year-old refrigeration fitter, became the first person to retire officially on a life-time pension set up by the southern California refrigeration and air conditioning industry. Here he receives first pension check from Gene Ballard, left, business manager of Refrigeration Fitters, branch local union #250, while being congratulated by Herb Schuch, of the Southern California chapter of RACCA.

Robertshaw-Fulton Contracts for New Building

RICHMOND, Va. — Robertshaw-Fulton has signed a contract with the Daniel Construction Co. of Virginia, a Richmond firm, for construction of a new two-story general office building in suburban Richmond which will house Robertshaw's corporate headquarters.

The building, to be ready for occupancy by the early summer of 1962, will be erected on a six-acre site in Henrico County, adjacent to the Willow Lawn shopping center. It will provide approximately 42,000 sq ft of office space, more than double the current working area.

TYPE 56

First choice of Manufacturers!

A condenser water regulator with a smashing success story! In three short years the Type 56 Condenser Water Regulator has soared to top choice of the industry—top choice of foremost manufacturers of refrigeration equipment, engineers, contractors, service men. Reasons? Just to mention a few:

Wide range—Instantly adjustable to either R-12 or R-22 without changing springs—by simply turning knurled cap. (Setting easily made tamper-proof when desirable.)

Fits in—Small, but plenty of capacity, smoothest modulation, remarkable flow characteristics.

Marsh quality throughout—Monel seat beads that minimize wire drawing; leak proof bellows; provision for manual flushing after installation. More efficiency; more range; more downright value! Bulletin gives full details.

Your wholesaler stocks it!

MARSH INSTRUMENT COMPANY
Dept. D Skokie, Illinois
Division of Colorado Oil & Gas Corporation
Marsh Instrument & Valve Co. (Canada) Ltd., 840/ 103rd St., Edmonton, Alberta, Canada. Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas. Eastern Seaboard Warehouse: Marsh Instrument Co., 1209 Anderson Ave., Fort Lee, N.J.

MARSH Refrigeration Instruments
Gauges • Thermometers • Valves

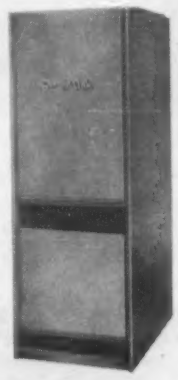
MIGHTY MITE

Makes Motor DRIVEN APPLIANCES SAFE!

MIGHTY MITE MOTOR PROTECTORS

MECHANICAL INDUSTRIES PRODUCTION CO.
223 Ash Street Akron, Ohio

PRIDE OF OWNERSHIP starts early...lasts a lifetime! You understand it. So do your customers. It represents the **satisfaction** that comes from owning a prized possession...one that represents the best efforts of its maker. **ROUND OAK** furnaces and air conditioning equipment have earned that kind of customer appreciation. And, it pays off for dealer, builder, contractor and home owner. Everyone appreciates and benefits from **quality.**



ROUND OAK DIVISION
PEERLESS CORPORATION
1853 LUDLOW • INDIANAPOLIS, INDIANA

* NOW 4 locations to better serve the growing family of Round Oak customers
INDIANAPOLIS INDIANA | DOWAGIAC MICHIGAN | ATLANTA GEORGIA | TAMPA FLORIDA

Air Conditioning an Old Office Building

Problem: *Take Minimum Space* Story: *How It Was Done*

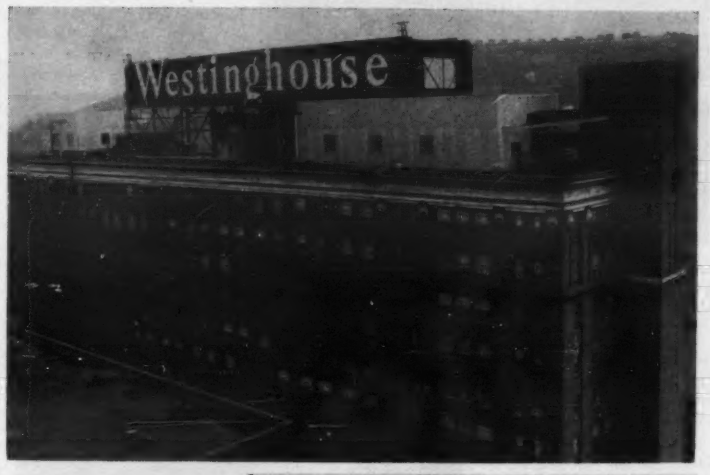
By C. J. Zeiler, Jr., Plant Engineer, East Pittsburgh Div., Westinghouse Electric Corp.

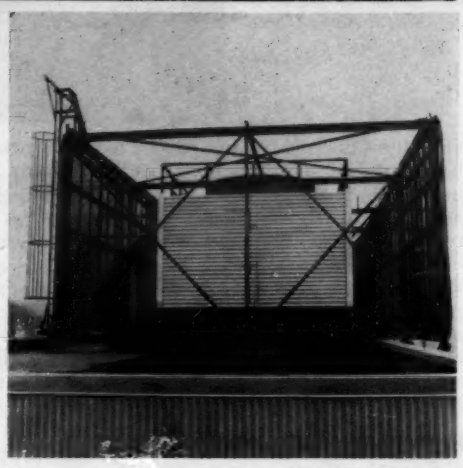
The largest office building of the East Pittsburgh Div. of Westinghouse Electric Corp. is an 11-story structure with 175,000 sq ft of space. It was built in 1925 and houses most of the key personnel of the division, including negotiating and sales, executive, purchasing, engineering, and plant protection. The plant reception room and photographic department, an executive dining room and an auditorium are also located in the building.

The original comfort conditioning equipment for this building consisted of direct radiation for heat, and unit heaters with fresh air intakes for ventilation mounted under the windows approximately every 40 ft. The unit heaters were equipped with stationary throw-away type filters. Use of the unit heaters was very limited since people working close to them complained of drafts and either shut down the units or blocked off the discharge grille, resulting in very poor working conditions. Temperatures on hot, humid summer days were almost intolerable, and the dirt coming through the open windows was a constant problem.

A complete engineering study of an air conditioning system for this building was undertaken by the plant engineering department of the division. The basis of design was to provide year-round comfort air conditioning —heating, cooling, cleaning, and dehumidification of the air, and necessary fresh air supply to control freshness and remove odors—to all areas of the building.

This was to apply to large drafting and engineering rooms occupying one-half of a floor as well as to private offices with only one occupant. The system was to be in operation by June 1, 1960. Recommendations for the installation of such a system were made and approved. Monies were made available in the summer of 1959 and a target date of June 1, 1960, was established for operation of the system.





TWO PENTHOUSES on roof of building house all equipment except cooling tower, which is concealed between the two large company name signs facing in opposite directions. It can be seen at end of sign in picture above and from closer viewpoint at right. Abandoned elevator penthouse adjacent to equipment area at right houses 1,000 kw power center.

The Design Problem

The major problem in designing the system was the necessity of taking a minimum amount of office space since all available space in the building was fully occupied. The system as finally designed placed all of the operating equipment in two penthouses which were constructed on the roof of the building. The upper end of the building columns in the area selected for the penthouses was uncovered and stub columns were welded on each column, extending the columns several feet above the roof.

Supporting steel work for the penthouses was fastened to the stub columns and the penthouses were built with steel pan and 4-in.-thick concrete floors, sandwich-type insulated walls, and metal deck with built-up insulation and waterproofing for roofs. This construction was used to keep the loading on the building columns at a minimum.

The building was divided into three zones — namely, north, center, and south—with separate air handling, heating, cooling, and cleaning equipment for each zone. Two sets of this type of equipment, together with adequate water-chilling equipment for all three zones, were installed in the south penthouse, and one set of heating, cooling, and cleaning equipment was installed in the north penthouse.

A dual-duct, high-velocity air handling system was selected with warm and cool connections to each of the constant-volume pressure-reducing sound-attenuating boxes. These dual ducts extend from the penthouse to the ceiling of the first floor, diminishing in size at each floor as they extend downward. The ducts are rectangular in the vertical drops and are placed side by side with 1-in.-thick fiberglass insulation between and around them.

The vertical ducts are installed on the office side of the three stair wells, and after insulation, were encased in metal lath and plaster wall to match the office construction. This used a minimum of valuable office space. The vertical ducts are sized to handle 53,000 cfm of air on the cold side and 39,000 cfm of air on the hot side as they enter the 11th floor on the south and center zones.

North Zone Requires 20% Less Capacity

Capacity on the north zone is approximately 20% less as the dining room (located on the 11th floor) and the auditorium (located on the first floor) each had their own air conditioning systems, which were in good operating condition and were not included in the new central system.

At the ceiling of each floor, circular ducts were run horizontally from the vertical duct to local mixing boxes, and were connected to them by means of flexible ducts. As all of the office ceilings were of the suspended type, they were removed in the areas where ducts were installed and then replaced after the air conditioning system was installed and operating.

The mixing boxes were mounted 10 ft. apart on each side of the horizontal duct and in the approximate center of each floor, distributing conditioned air towards the outside walls. Thermostatic control was provided so

FREE BULLETIN *tells how* **ANEMOTHERM Air Meter**

saves in balancing air conditioning, heating and ventilating systems

The Model 60 Anemotherm Air Meter, developed by the Anemostat Corporation of America, gives you — *in one convenient instrument* — a simple, rapid method of balancing and checking any air system. It puts at your fingertips, by means of *color-coded* pushbuttons, air velocity, air temperature and static pressure. • The Anemotherm Air Meter pays for itself through time saved on only one major job. **Write for Bulletin 55 giving all the facts.**

AC 1336

ANEMOSTAT CORPORATION OF AMERICA
10 EAST 39th STREET, NEW YORK 16, N. Y.

Proper Meat Cooling is provided by space-saving Krack Semi-Circular Unit Coolers that maintain correct temperature and humidity balance to prevent shrinkage.

Safe Dry Product Storage is provided by ceiling mounted Krack BUC Product Coolers that maintain a constant temperature.

Frozen Food Walk-in Coolers are kept at —10°F. temperature by trouble-free Krack lo-temp, hot gas defrost units.

Low Cost Air Conditioning is provided by ceiling mounted Krack Komfort Master air handling units that are "whisper quiet."

You can count on KRACK to deliver FULL-RATED CAPACITIES!

ADVANTAGES IN SPECIFYING KRACK EQUIPMENT

You can be sure of ratings and equipment that match the job. You gain advantage of lower bidding...no need to specify oversize equipment. You save installation and maintenance costs.

KRACK REFRIGERATION APPLIANCES INC.

Manufacturers of Freon or Ammonia, Recirculated, Flooded or Direct Expansion Heat Transfer Equipment

MAIL COUPON FOR FREE BULLETIN 600

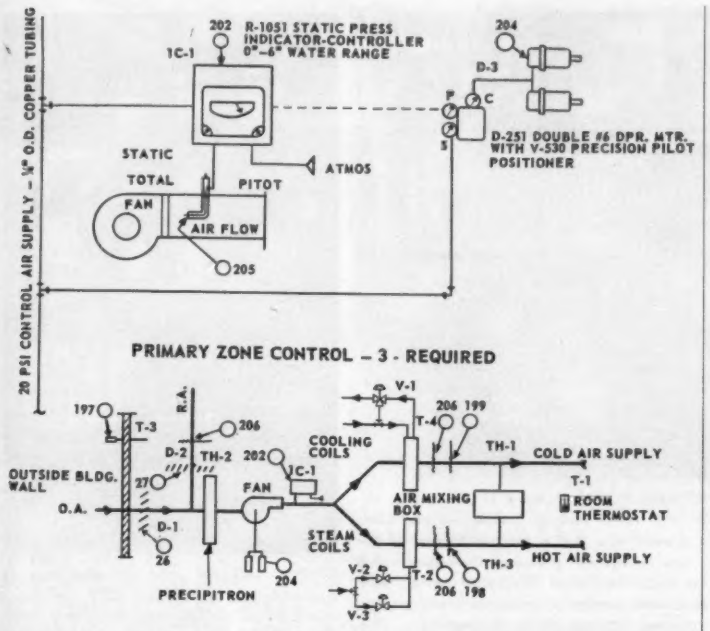
REFRIGERATION APPLIANCES, Inc., 901 W. Lake St., Chicago 7, Ill.

Name_____

Firm_____

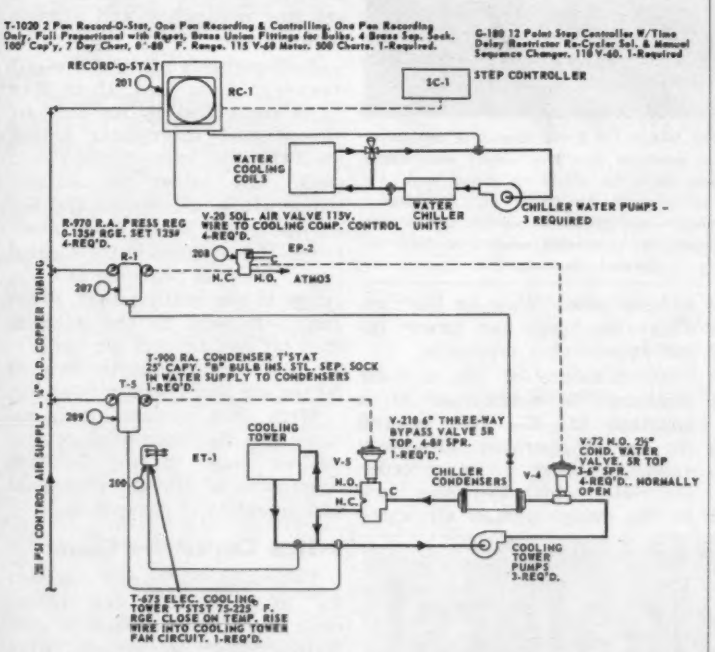
Street_____ City_____ Zone____ State_____

6040



TWO PHASES OF CONDITIONED AIR control arrangement are shown in this drawing. Upper part shows how static indicator controller IC-1 maintains static pressure in fan discharge duct by operating fan inlet vanes (D-3). Bottom part of drawing is schematic air flow diagram showing primary zone control. On increase in temperature at cold duct thermostat T-4, thermostat increases control pressure to cooling coil valve V-1, allowing more chilled water to pass through cooling coil and less water by-passed. On decrease in temperature sensed by T-4, the reverse occurs. When unit fan is shut down, solenoid valve is de-energized placing outdoor air damper in its closed position, and placing V-1 in coil by-pass position.

For mixing box control, on increase in temperature at room thermostat T-1, the thermostat increases control pressure to mixing box damper operator, which gradually closes hot air valve while opening cold air valve. Reverse of this occurs on falling room temperature.


T-1020 2 Pen Record-O-Stat, One Pen Recording & Controlling, One Pen Recording Only. Full Proportional with Reset, Brass Union Fittings for Bulbs, 4 Brass Sep. Sock. 100° Cap'y, 7 Day Chart, 0°-80° F. Range. 115 V-60 Motor. 500 Charts. 1-Required.
G-180 12 Point Step Controller W/Time Delay Restrictor Re-Cycler Sol. & Manual Sequence Changer. 110 V-60. 1-Required
RECORD-O-STAT
201
RC-1
SC-1
STEP CONTROLLER
WATER COOLING COILS
WATER CHILLER UNITS
CHILLER WATER PUMPS – 3 REQUIRED
R-970 R.A. PRESS REG 0-125# RGE. SET 125# 4-REQ'D.
V-20 SOL. AIR VALVE 115V. WIRE TO COOLING COMP. CONTROL 4-REQ'D.
EP-2
208
R-1
N.C.
N.O.
ATMOS
207
20 PSI CONTROL AIR SUPPLY – ¼" O.D. COPPER TUBING
T-900 RA. CONDENSER T'STAT 25° CAPY. "B" BULB IMS. STL. SEP. SOCK IN WATER SUPPLY TO CONDENSERS 1-REQ'D.
T-5
209
COOLING TOWER
V-210 6" THREE-WAY BYPASS VALVE 5R TOP. 4-88 SPR. 1-REQ'D.
ET-1
V-5
N.O.
C
N.C.
CHILLER CONDENSERS
V-4
V-72 N.O. 2½" COND. WATER VALVE. 5R TOP 3-4" SPR. 4-REQ'D.. NORMALLY OPEN
200
COOLING TOWER PUMPS 3-REQ'D.
T-673 ELEC. COOLING TOWER T'STST 75-325° F. RGE. CLOSE ON TEMP. RISE WIRE INTO COOLING TOWER FAN CIRCUIT. 1-REQ'D.

CHILLER CONTROL features use of recorder controller RC-1 which modulates step controller SC-1 to start and load the four refrigeration machines in sequence to maintain desired chilled water temperature. Manual sequence changer SC-1 permits this change in sequence as desired.

Condenser Water Control: When water chiller unit starts, solenoid air valve EP-2 places condenser water valve V-4 under control of pressure regulator R-1. When chiller unit compressor stops, valve EP-2 is de-energized exhausting V-4 control air to atmosphere. Should temperature of cooling tower water decrease to setting of thermostat T-5, the three-way control valve V-5 will allow water to by-pass cooling tower. A decrease in temperature of water from cooling tower to setting of thermostat ET-1 will stop cooling tower fan.

one thermostat controlled the temperature in small offices and one thermostat controls two mixing boxes in the large offices and drafting rooms.

In any office rearrangements where partitions are changed it will be a very simple job to change the thermostatic control to match the new conditions. In the private offices, all thermostats are knob adjusted and settings may be changed at any time by the occupant. In the large offices and drafting rooms, the thermostats are key adjusted and can be changed only by a representative of the plant engineering department. Key adjustment is necessary to maintain reasonable working conditions in large areas since employes constantly change thermostat settings, resulting in considerable friction among themselves.

The constant-volume mixing boxes are adjusted to provide an adequate flow of air to maintain temperatures required in each area. The percentage of fresh air make-up to the system is maintained at approximately 25% of that circulated to prevent build-up of odors and to-

(Continued on next page)

NOW IS STOCK-UP TIME FOR

FRIGIDAIRE EXPANSION VALVES AND THURO-DRIERS

These... and parts for all Frigidaire products are quickly available from any of these offices...

Genuine Frigidaire Expansion Valves, Thuro-Driers, and functional parts for any Frigidaire Product ever made are available to you through all of the Frigidaire offices listed here. Remember, all genuine Frigidaire parts are precision manufactured to new-product standards on the same tools used for regular production. And that means precision fit, easier replacement, longer life. Call any of these offices, or write Frigidaire Division, General Motors, Dayton 1, Ohio.

CALIFORNIA
Frigidaire Sales Corp.
3251 Leonis Blvd.
Los Angeles 58
Phone: Ludlow 9-3111

Frigidaire Sales Corp.
1250—53rd Street
Oakland 8
Phone: Olympic 2-9700

COLORADO
Frigidaire Sales Corp.
215 Wazee Market
Denver 4
Phone: Tabor 5-0121

FLORIDA
Domestic Refrig. Co., Inc.
134 N.W. Third Avenue
Miami 36
Phone: Franklin 7-4751

Byars-Forgy, Inc.
105 Twiggs Street
Tampa 2
Phone: 2-1828

GEORGIA
Frigidaire Sales Corp.
2995 E. Ponce de Leon Ave.
Decatur
Phone: Drake 8-4511

ILLINOIS
Frigidaire Sales Corp.
1200 N. Homan Avenue
Chicago 51
Phone: Capitol 7-7000

INDIANA
Refrigerating Equipment Co.
900 N. Senate Avenue
Indianapolis 2
Phone: Melrose 5-5442

IOWA
D. K. Baxter Company
806 Pierce Street
Sioux City 2
Phone: 5-3543

KENTUCKY
Smith Distributing Co.
831 E. Broadway
Louisville 4
Phone: Juniper 3-8312

LOUISIANA
Frigidaire Sales Corp.
4141 Bienville Street
New Orleans 19
Phone: Hunter 2-7864

MARYLAND
Frigidaire Sales Corp.
2315 Cecil Avenue
Baltimore 18
Phone: Hopkins 7-7300

MASSACHUSETTS
Frigidaire Sales Corp.
111 Cabot St.
Boston 94
Phone: Hillcrest 4-8200

MICHIGAN
Frigidaire Sales Corp.
13940 Tireman Avenue
Detroit 28
Phone: Tiffany 6-5800

MINNESOTA
Frigidaire Sales Corp.
2331 University Ave., S.E.
Minneapolis 14
Phone: Federal 2-4261

MISSOURI
Frigidaire Sales Corp.
1534 Burlington Ave.
N. Kansas City 16
Phone: Baltimore 1-5400

Frigidaire Sales Corp.
482 N. Kingshighway Blvd.
St. Louis 8
Phone: Forest 1-0400

NEBRASKA
Major Appliance Co.
1101 Jackson Street
Omaha 8
Phone: 342-4400

NEW YORK
Frigidaire Sales Corp.
1155 Niagara Falls Blvd.
Buffalo 26
Phone: TF 7-3900

Frigidaire Sales Corp.
1775 Broadway
New York 19
Phone: Plaza 7-4000

Chapin-Owen Co., Inc.
205 St. Paul Street
Rochester 4
Phone: Locust 2-6880

Onondaga Supply Co., Inc.
344 W. Genesee Street
Syracuse 1
Phone: Granite 4-1251

NORTH CAROLINA
Frigidaire Sales Corp.
2000 Freedom Drive
Charlotte 1
Phone: Edison 3-9834

OHIO
Frigidaire Sales Corp.
1455 Schaaf Rd.
Cleveland 31
Phone: Shadyside 9-5454

Frigidaire Sales Corp.
3555 S. Kettering Blvd.
Dayton 19
Phone: Axminster 9-3511

OREGON
Frigidaire Sales Corp.
1035 N. W. 14th Avenue
Portland 9
Phone: Capitol 2-1851

PENNSYLVANIA
Frigidaire Sales Corp.
500 E. Hunting Park Ave.
Philadelphia 24
Phone: Garfield 6-8200

Frigidaire Sales Corp.
248-50 S. Euclid Ave.
Pittsburgh 6
Phone: Montrose 1-7528

TENNESSEE
McGregor's, Inc.
1071 Union Avenue
Memphis 4
Phone: Broadway 6-3301

TEXAS
Frigidaire Sales Corp.
3500 West Freeway
Fort Worth 7
Phone: Pershing 8-9201

Frigidaire Sales Corp.
1817 Wyoming St.
El Paso, Texas
Phone: LI 2-1657

Cox & Blackburn, Inc.
2301 Commerce Avenue
Houston 2
Phone: Capitol 5-1461

Straus-Frank Company
162 Coliseum Drive
San Antonio 6
Phone: Capitol 6-0101

UTAH
W. H. Bintz Company
433 W. Third South St.
Salt Lake City 11
Phone: Empire 3-5821

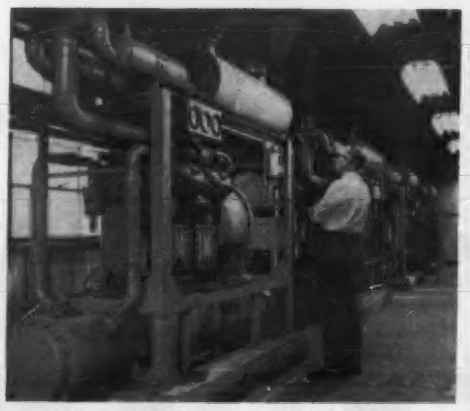
WASHINGTON
Sunset Electric Company
North 703 Division St.
Spokane 1
Phone: Fairfax 5-4563

Air Conditioning An Old Office Building

Here Are The Major Components

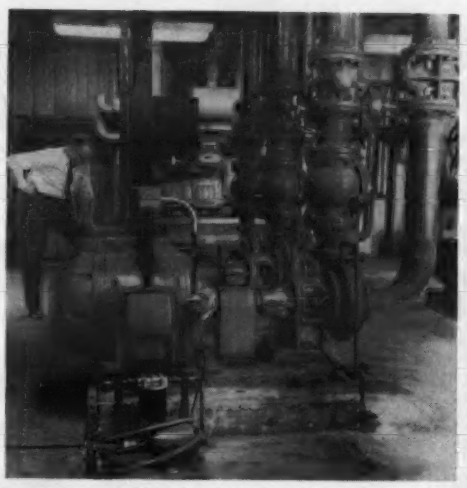
CONTROL CENTER FOR 440 Volts, 3-phase, 60-cycle power to the chiller assemblies, cooling tower pumps, chilled water pumps, fans, "Precipitrons," "Sterilamps," and miscellaneous small equipment.

CIRCULAR DUCTS ON each floor run horizontally from the vertical duct to mixing boxes, being connected to them by means of flexible ducts. Since all ceilings were of suspended type, they were removed in the areas where ducts were installed and then replaced after system was installed and operating.



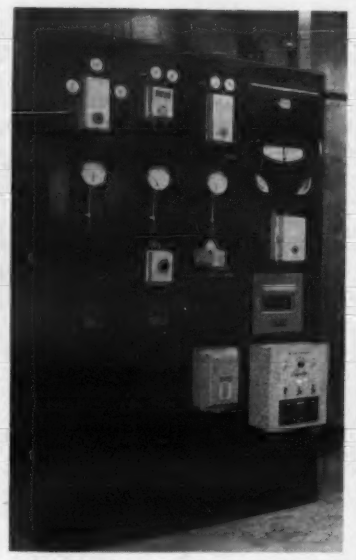
TO PROVIDE COOLING in the existing building installation, four 125-ton chiller assemblies were installed. Each chiller will operate at either one-half or full capacity. Control arrangement is such that eight-step control is provided. Sequence of operation between units can be changed to balance wear on machines.

MIXING BOXES mounted 10 ft apart on each side of horizontal circular duct and located in approximate center of each floor, distribute conditioned air toward outside walls. Thermostatic control is used with one thermostat controlling temperature in small offices and one thermostat controlling two mixing boxes in large offices and drafting rooms. Where office partitions are changed it will be a simple job to change thermostatic control to match new conditions.



THREE CENTRIFUGAL PUMPS, housed in penthouse, recirculate water from tower through condensers and back to tower. To prevent too low a temperature of water and resulting low refrigerant pressure, three-way valve is used to by-pass enough of discharge water from condensers back into suction of cooling tower pumps to maintain desired leaving water temperature. This permits full water flow through condensers at all times and eliminates throttling controls on water lines to condensers. It also reduces flow of water to cooling tower during cold weather.

AIR CLEANING FOR EACH ZONE located in equipment penthouses is provided by "Precipitron" electrostatic cleaners, power packs for which are shown here. Air purification is provided by banks of "Sterilamps." Fresh air dampers are placed on suction side of fan and are manually set to provide amounts of fresh air deemed necessary.



TEMPERATURE OF cold air discharge is maintained at a constant 55°F the year-round by an air-operated, three-way valve actuated by a recorder controller. It by-passes back to pump suction all water not required by cooling coils to maintain cold air temperature. Constant water flow at 45° is maintained to the inlet of the three-way valve. Amount of cooling required depends on building occupancy and outside temperature.

(Continued from preceding page) bacco smoke. Return air from each floor to the fan inlet is by means of existing air shafts at each end of the building, and a new air shaft installed in an open space between the elevator shaft and the lavatory entrances at the center of the building.

The equipment for each zone, located in the penthouses, consists of a sheet-metal housing in which is located a centrifugal fan driven by a 60-hp motor, a set of cooling coils using chilled water, a set of heating coils using steam at 5 lbs gauge pressure, a "Precipitron" electrostatic cleaner, and a bank of "Sterilamps."

Fresh air dampers are placed on the suction side of the fan and are manually set to provide the amount of fresh air necessary to maintain a good working atmosphere.

Constant discharge pressure of the centrifugal fan is maintained by an air-operated pressure-control instrument which adjusts inlet vanes on the fan. This also keeps fan power requirements at a minimum.

Temperature of the cold-air discharge is maintained at a constant 55° the year around by an air-operated three-way valve actuated by a recorder controller, which by-passes back to the pump suction all water not required by the cooling coils to maintain the cold-air temperature.

A constant water flow at 45° is maintained to the inlet of the three-way valve. The amount of cooling required depends on building occupancy and outside temperature.

Temperature of the hot-air discharge from Sept. 15 to May 31 is controlled by an outdoor air-operated thermostat acting upon the inlet valve to the steam coils. The colder the outside temperature, the hotter the hot air discharge. Steam from bleeders on the turbines in the central power plant is provided at 5 lbs gauge to the heating coils. From June 1 to Sept. 15, the steam is shut off and the hot air temperature is an uncontrolled mix of return air and fresh outside air.

With this system, temperatures can be maintained at any desired point in any location regardless of sun or wind load and amount of occupancy.

8-Step Control for Chillers

To provide water at a constant 45° to the inlet of the cooling coils, four 125-ton chillers with water-cooled condensers were installed, together with necessary chilled-water circulating pumps. Each chiller will operate at either one-half or full capacity and is arranged so that eight-step control is provided.

The first unit starts with no load to keep power surges to a minimum, and then it goes to half load. The second unit then comes on at no load, if required, and goes to half load. If additional load is required, the first unit goes to full load, after which the second unit goes to full load, and units three and four then come on following the same pattern as units one and two.

Sequence of operation between units can be readily changed to balance wear on the machines. In cold weather only two units are operated.

Cooling water for the condensers of the water chillers is provided by a 1,300-gpm cooling tower designed to provide 85° water when supplied with 95° water, and with air at 78° wet-bulb temperature. The cooling

Sales up 53% for HEATING Heatwave AIR CONDITIONING dealers!

HERE'S WHY HEATWAVE OUT-PERFORMS 6 TOP 3 h.p. UNITS*

	BRAND A	BRAND G	BRAND L	BRAND P	BRAND W	BRAND Y	HEATWAVE
B.T.U. Output	32,000	36,000	36,000	34,000	37,000	34,000	36,000
KW Input	4.4	5.15	4.51	4.5	5.0	3.95	3.7
Cond. Face Area	4.1	4.8	4.35	3.79	6.8	5.64	5.5
Rows Coil	3	3	3	3	3	3	3

*Specifications as shown in March 7 issue of Air Cond. Heating and Refrig. News-Brand Names on Request.

New Heatwave uses 24.1% LESS electricity and produces 1,167 more BTU's per hour than average of six top brands!

Here's one more reason why Heatwave Air Conditioning sales are up 53%! And you'd expect it too if you could offer your customers famous Heatwave quality with the performance as shown above. Whether it's three h.p. or ten h.p., Heatwave offers maximum performance with minimum operating cost. Why don't you write or wire collect for more information. You'll be glad you did!

SOUTHWEST MFG. CO. AURORA, MISSOURI
Subsidiary of The F. E. Myers and Bro. Co.

tower is located directly over the penthouse in which the water-chilling equipment is located and between the two faces of a large illuminated sign which hides the tower from view.

Three centrifugal pumps, housed in the penthouse, recirculate the water from the tower through the condensers and back to the tower. Two of these pumps are adequate to handle the full capacity of the tower.

To prevent too low a temperature of water going to the condensers and the resultant low pressure on the refrigerant system, a three-way valve is used to by-pass enough of the discharge water from the condensers back into the suction of the cooling tower pumps to maintain the desired water temperature leaving the condensers. This permits full water flow through the condensers at all times and eliminates throttling controls on the water lines to the condensers. It also has the advantage of reducing the flow of water to the cooling tower during cold weather.

A central compressed-air system is used to control inlet vanes to fans, water control valves, dampers in mixing boxes by room thermostats, and other functions. It is supplied through a filter, dryer, and regulator from the 100-lb shop-air system, and the low-pressure control air is then piped throughout the building to all control points.

Controlling the Cooling Tower

Fan on the cooling tower is controlled thermostatically to maintain any desired temperature of outlet water from the tower. This control is an all-on or all-off type.

In warm weather, the make-up water to the cooling tower is from the city mains and the control of algae and deposits is controlled by chemical treatment and a constant blowdown. When the heating system is in operation, the make-up is provided from the condensate system and requires no treatment. Only periodic blowdown is required to remove dirt accumulated in the tower from the air passing through it.

To provide power for the air conditioning equipment, it was necessary to install a 1,000-kw power center in the area since the existing power at 220 and 110 v to the building did not have adequate capacity to carry this additional load.

An ideal location was available in the penthouse of an abandoned experimental elevator adjacent to the new penthouse for the center and south zones. Power was brought at 2,300 v from an outdoor substation located 500 ft away and was distributed from the new power center at 440 v, 3-phase, 60-cycle.

The fans on the system are interlocked with the fire-alarm system in the building so if any one of the 33 fire boxes is pulled, all of the fan breakers will trip and must be reset before the fans can be operated again. This protection is to prevent smoke from being pulled into the system and being redistributed to all floors. This feature lessens the possibility of panic by the occupants and cuts off the air supply to a fire.

When the air flow is stopped, the cooling requirements will drop to almost zero and the water chilling equipment will automatically cut back to match the load.

A feature which was added to each of the three zones during the construction period was a bank of 36 "Sterilamps" rated at 39 watts per lamp. This was done to decrease the bacteria count and in the hopes that sickness from airborne bacteria could be reduced. Records at this time are not adequate to determine whether this result has been achieved.

Some of the problems encountered in this installation were the necessity of hoisting all materials for installation in the penthouses from the ground to the roof of the building and the cutting of holes through reenforced concrete floors for the dual-duct system.

Openings for ductwork were made by drilling around the perimeter of the holes with a series of 3-in.-diameter holes using a diamond drill. Installation of the complex dual-duct air-handling system also posed some problems.

All of the work within the 11 floors of the building was done at night and on weekends so there would be a minimum of interference with office building operations.

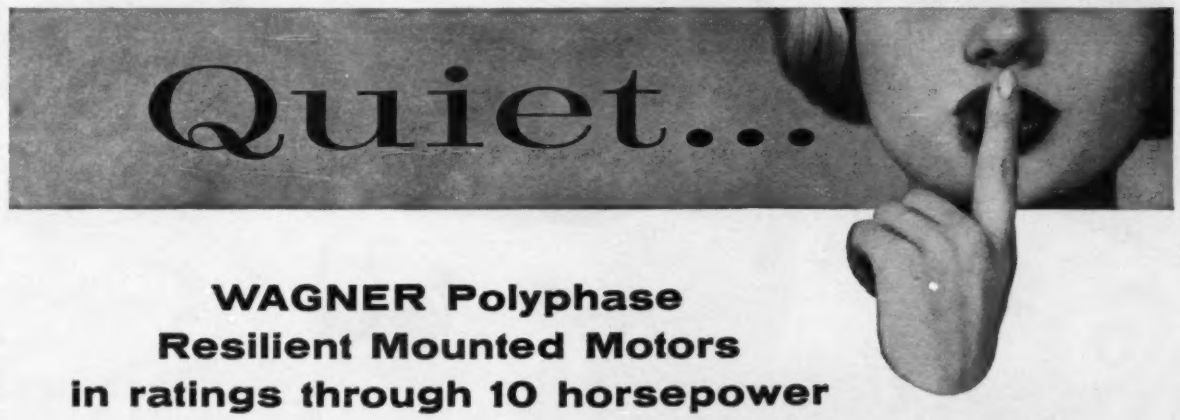
The operation deadline date was not completely met as the center and south zones were placed in operation on May 30, 1960, and the north zone on July 2, 1960. The system has now operated satisfactorily over a complete range of conditions from outside air temperatures of 95° to a low of zero.

The most heard comment is, "How much cleaner the building is." This is particularly true in the drafting departments where normal dirt in the air used to be a serious problem. The occupants of the building had expected good temperature control, but had not realized how many other benefits are obtained by a complete air conditioning system.

The new air conditioning system resulted in more usable office space since space previously used by cast-iron radiators and unit heaters became available. The old equipment was not all removed at one time, but is being removed as the areas are rearranged or repainted.

Major Items of Equipment, 'N' Building Air Conditioning System

4—125 ton Westinghouse water chillers with water-cooled condensers
3—"Precipitron" electrostatic air cleaners
3—Banks of 36 "Sterilamps," 39 watts per lamp
3—Sturtevant centrifugal fans, driven by 60-hp motors
1—1,300 gpm water cooling tower
3—500 gpm chilled water circulating pumps
3—650 gpm cooling tower water circulating pumps
3—Banks of cooling coils
3—Banks of heating coils
1—2,300-v, 3-phase, 60-cycle to 440-v power center
2—Electric power control centers, one for each penthouse
512—Constant volume air mixing boxes with distributors and dampers
110—Key adjusted room thermostats
140—Knob adjusted room thermostats



WAGNER Polyphase Resilient Mounted Motors in ratings through 10 horsepower

Quiet, vibration-free performance is essential when motors are installed in areas where noise must be held to a minimum . . . in hospitals, churches, schools, office buildings, restaurants and similar locations where quiet is needed or wanted.

Such installations have created a need for larger polyphase motors that whisper while they work. Wagner has met this need by expanding its line of polyphase resilient mounted motors to include standard ratings through 10 hp.

You certainly have applications that call for a smooth running motor, cushioned by resilient mountings. To make sure they're quiet, specify Wagner Polyphase Resilient Mounted Motors. Only Wagner can provide an entire range of ratings through 10 hp.

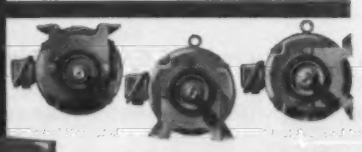
Constant research and development have kept Wagner up front in electric motor design for more than 65 years . . . made the name Wagner one you can depend on in choosing electric motor drives.

Your nearby Wagner Sales Engineer can help you select the right motor to meet your requirements. There are Wagner branch offices in 32 principal cities.

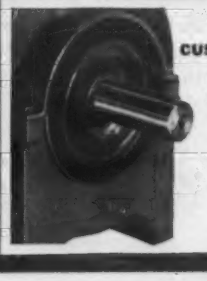
Wagner Electric Corporation
6441 PLYMOUTH AVENUE, ST. LOUIS 33, MISSOURI

WM60-14

SLEEVE OR BALL BEARING
These motors are furnished with quiet running steel-backed babbitt-lined sleeve bearings of high load carrying capacity. Ball bearings can be supplied when desired.



CEILING, SIDEWALL OR HORIZONTAL MOUNTING
You can mount these motors on walls or ceilings by rotating the cradle base 90° or 180°. Motor stays dripproof.



NEOPRENE CUSHIONING RING
Annular mountings, of oil-resistant neoprene bonded to steel rings, cushion the motor in its cradle base to absorb the small amount of vibration that remains in the most carefully balanced motor.

Advertising Age
FTC Hits Analgesics, Cosmetics, Tires
Gas Air Conditioners—Report From the Field
NEWS
Public Relations, Registration Law Concern Engineers
Promoting Industry Products, Greater Profit To Be Objectives of An Program for 1961
DUNHAM-BUSH NOW OFFERS 15 SIZES

at this moment you are demonstrating

THE VITALITY OF A WEEKLY INDUSTRY NEWSPAPER

There is no other form of communication today that quite equals the terse style of the newspaper. It is pointed, it is crisp, and when all other reading must be pushed aside, the newspaper is there—demanding and receiving attention.

In air conditioning, heating and refrigeration, just as in advertising, the man interested in events and trends while they're still news is naturally the executive with the greatest responsibility and fewest hours to read.

For 34 years, *Air Conditioning, Heating & Refrigeration NEWS*, the industry's only newspaper, has been meeting the needs of such executives in manufacturing, contracting, and all phases of distribution. It serves 22,053* paid subscribers a weekly menu of industry news—as it happens.

It is the one publication with weekly news vitality—aimed solely at the racing pace of the key executive who, in the final analysis, is the man to put the stamp of approval or disapproval on your product. Utilize this vitality for your products—make sure your advertising includes a solid schedule in the industry's only newspaper.

**Average net paid circulation, Dec. 31, 1960 ABC Audit Report. Circulation includes: 12,601 dealer-contractors, distributor contractors, and service and installation contractors; 945 wholesalers; 5,099 manufacturers.*

AIR CONDITIONING
HEATING & REFRIGERATION
NEWS

BUSINESS NEWS PUBLISHING COMPANY
450 West Fort Street • Detroit 26, Michigan

NEW YORK
521 Fifth Ave.
MUrray Hill 2-1928-9

CHICAGO
134 S. LaSalle St.
FRanklin 2-8643-4

LOS ANGELES
4710 Crenshaw Blvd.
AXminster 2-9501

DETROIT
450 W. Fort St.
WOodward 2-0924

Age of House May Be Key to Improvement Loan--

(Continued from Page 1, Col. 3)

izes FHA insurance for home improvement loans of up to $10,000 per family unit at no more than 6% per year interest, and with up to 20 years to repay.

It makes clear that such loans can be made for houses more than 10 years old, but it attaches some rather vague restrictions on younger structures. How these restrictions will affect loans for installation of new air conditioning and heating systems remains to be spelled out.

Pertinent provisions are found in a new subsection "h" to Section 220 of the National Housing Act. Significant extracts from this subsection are:

"(1) . . . As used in this subsection, 'home improvement loan' means a loan, advance of credit, or purchase of an obligation representing a loan or advance of credit made for the purpose of financing the improvement of an existing structure (or in connection with an existing structure) which was constructed not less than 10 years prior to the making of such loan, advance, or purchase and which is used or will be used primarily for residential purposes:

"Provided that a home improvement loan shall include a loan, advance, or purchase with respect to the improvement of a structure which was constructed less than 10 years prior to the making of such loan, advance, or purchase, if the proceedings are or will be used **primarily for major structural improvements or to correct defects** which were not known at the time of the completion of the structure or which were caused by fire, flood, windstorm, or other casualty; 'improvement' means conservation, repair, restoration, rehabilitation, conversion, alteration, enlargement, or remodeling; . . .

"(2) To be eligible for insurance under this subsection, a home improvement loan shall—

"(i) not exceed the commissioner's estimate of the cost of improvement, or $10,000 per family unit, whichever is the lesser;

"(ii) be limited to an amount which when added to any outstanding indebtedness related to the property (as determined by the commissioner) creates a total outstanding indebtedness which does not exceed the limits provided in subsection (d) (3) for properties (of same type) other than new construction;

"(iii) bear interest at not to exceed a rate prescribed by the commissioner but not in excess of 6 per centum per annum of the amount of the principal obligation outstanding at any time, and such other charges (including such service charges, appraisal, inspection, and other fees) as may be approved by the commissioner;

"(iv) have a maturity satisfactory to the commissioner, but not to exceed 20 years from the beginning of amortization of the loan or three-quarters of the remaining economic life of the structure, whichever is the lesser;

"(v) comply with such other terms, conditions, and restrictions as the commissioner may prescribe; . . ."

Westinghouse--

(Continued from Page 1, Col. 4)

house common stock.

J. A. Numero, Thermo King president, said the transaction is subject to the approval of the company's stockholders at a meeting scheduled to be held early next month. Westinghouse does not need shareholder approval, and can handle the exchange from its authorized but unissued shares.

Under the agreement, seven shares of Westinghouse common stock would be exchanged for each nine shares of Thermo King outstanding on Aug. 12.

Thermo King would be operated as a wholly-owned subsidiary with its present management and facilities, according to Westinghouse. The Minneapolis firm has about 800 employes.

In the fiscal year ended last Nov. 30, Thermo King earned $1,493,602, or $1.66 a share, on sales of $21,142,071. Westinghouse cleared $79,057,562 last year, or $2.22 a share, on sales of $1,955,731,183.

Comfort-Aire
AIR CONDITIONING

Self Contained Air Conditioners

Four full capacity models of 2, 3, 4 and 5 h.p. for residential and commercial applications. Smart in appearance and design proven, they allow complete flexibility of installation. Large coil surfaces, bonderized cabinets, Tecumseh compressor, capillary system and other quality features provide a Comfort-Aire owner many years of quiet, dependable operation.

Remote Air Conditioners

Available in the same size range as self-contained models, the split systems offer a large choice of evaporator-blower units and coil sections. The compact, efficient matched compressor units feature oversized condensers, low velocity horizontal air flow and Tecumseh compressors. Comfort-Aire matched systems are easy to install, quiet in operation and weather proofed to provide years of trouble free performance.

Also Available in Heat Pump Models

Dehumidifiers - Portable Room Air Conditioners - Through-the-Wall Air Conditioners - Furnaces - Air Cooled Remote and Self Contained Air Conditioners - Air Cooled Remote and Self Contained Heat Pumps

HEAT CONTROLLER, INC.
1900 Wellworth Ave. Jackson, Mich.

SAND-BANUM
CONCENTRATED PREPARATIONS

INCREASE YOUR AIR CONDITIONING EFFICIENCY AND ECONOMY BY REMOVING AND PREVENTING SCALE, RUST AND CORROSION IN ALL TYPES OF AIR CONDITIONING SYSTEMS.

AIR-CON EMULSION SAND-BANUM

For AIR CONDITIONING SYSTEMS and OPEN CIRCULATING SYSTEMS
(Where Water Is Recirculated)

A Proportioner is available for larger systems for automatic feeding of Air-Con into the tower.

A concentrated algaecide, safe and simple to use, also available.

SAND-BANUM BRIQUETTES

for Smaller Systems: Readily Water Soluble. May be placed in a screen basket in sump of unit or in a feeder placed in make-up or circulating line.

BLUE SEAL EMULSION SAND-BANUM

Circulating Water Treatment for CLOSED Systems. Gradual action avoids violent removal of old scale. Apply under normal operating conditions in absolute safety.

Guaranteed Harmless to Personnel and Equipment
Contains NO CHROMATES = NO ACIDS.
Now you can reduce costly bleed-off.

Very small quantities disperse into millions of minute particles, suspended in water, and attract to themselves all foreign matter, holding it in suspension. Colloidal action causes spongy disintegration of scale, which is removed through bleedoff at a low point. Further, a microscopic film is deposited on all metal surfaces protecting them against corrosion. Write for literature. Available direct or through distributors.

AMERICAN SAND-BANUM COMPANY, Inc.
Merrick, N. Y.
"Sand-Banum Products Since 1926"
WATER TREATING CHEMICALS • RUST PREVENTIVE COATINGS
DIESEL AND FUEL OIL TREATMENTS
Agencies in Principal Cities

WITT LOW TEMP.
Defrostair COIL WITH
EXCLUSIVE PATENTED
Automatic Electric Defrost System

PAT. NO. 2539613 -2492970

DEFROSTS AUTOMATICALLY
FOR LOW TEMPERATURE ROOMS, FOOD STORAGE, FOOD FREEZING, ICE CREAM STORAGE, INDUSTRIAL LOW TEMP. APPLICATIONS.

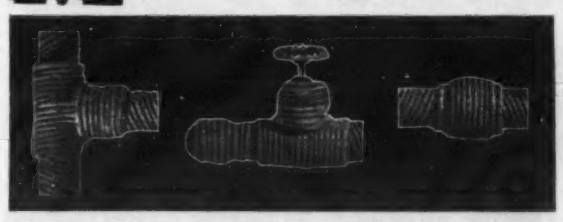
Witt exclusive Defrostair patented Heat Trap coil requires only a low cost single pole, double throw time clock for complete automatic defrosting. Easy low cost installation. Requires no re-evaporation or special plumbing. Completely automatic. Available in 21 models ranging in BTU capacities from 1400 to 44,100 at 10°T.D. Write today for complete Witt Catalog.

Defrostair FOR BELOW FREEZING

A. H. WITT COMPANY, INC.
940 N. Sycamore Ave., Los Angeles 38, Calif.

1 INSULATION FITS EVERY SIZE PIPE... ANY TYPE FITTING

Mortell NoDrip TAPE



No tools. No vapor-seals, no fasteners, brads or adhesives. Wrap NoDrip Tape spirally around any size pipe, joints, tees, valves, angles . . . and the job's done! NoDrip Tape is a pliable, cork-filled, self-adhering product. Forms a *permanent* air-tight, 100% vapor- and moisture-proof jacket. Stops condensation drip, sweating, frost. Ends rust and corrosion.

MORTELL NoDrip PLASTIC COATING
. . . For big areas, large pipes, tanks, air ducts. Another fine Mortell refrigeration product. Applies with brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces. Permanently stops condensation, rust, corrosion.

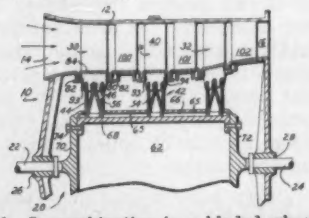
Mortell COMPANY
Makers of Mortite Caulking Cord and Mortite Caulking Gum

Mortell Company
549 Burch St., Kankakee, Ill.
Please send full information about the complete line of Mortell refrigeration products.
I am a Jobber ☐ Dealer ☐ Serviceman ☐
Name_____
Firm_____
Address_____
City_____ Zone____ State_____

PATENTS

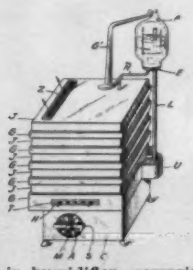
Week of March 21 (Concluded)

2,976,011. FABRICATED BLADED COMPRESSOR WHEELS. Edward A. Stalker, Bay City, Mich., assignor to The Stalker Corp.



1. In combination in a bladed wheel for exchanging energy with a fluid, a hub structure comprising a plurality of axially spaced disks having peripherally continuous and imperforate radial outer portions secured together for rotation about the axis of symmetry thereof, a plurality of blades peripherally spaced about said hub structure, each said blade having axially spaced slots each receiving said radially outer imperforate portion of each of said disks thereinto. . . .

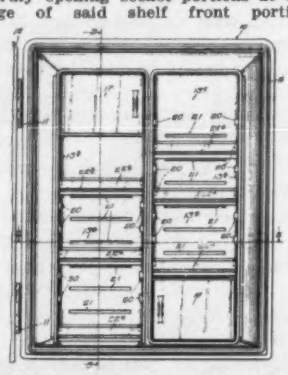
2,976,026. AIR HUMIDIFIER. Everardo Machuca Aquirre, Juan de Dios Arias 161, Col. Asturias, Mexico City, Mexico.



1. An air humidifier, comprising in combination, a plurality of tray elements detachably superimposed upon each other, each tray element having a bottom portion, an annular wall portion extending downwardly from said bottom portion and an annular rim portion extending upwards from said wall portion, the wall portion of each of said superimposed tray elements resting on the bottom portion of the respective tray element below the same, so that said bottom portions and said wall portions define a plurality of superimposed closed chambers. . . .

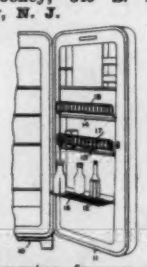
2,976,096. SHELVING ARRANGEMENT FOR A REFRIGERATOR DOOR. Virgil E. Combs, Evansville, Ind., assignor to Whirlpool Corp.

1. A removable shelving arrangement for a refrigerator door having an inner surface cavity with rear and side walls and a removable shelf having an article supporting bottom portion and an upstanding article retaining front portion, comprising: a plurality of pairs of oppositely positioned bosses on said side walls having their upper rear surfaces tapered downwardly and forwardly, the rear wall having a plurality of spaced, substantially horizontal recesses therein, a rear edge portion on said shelf bottom adapted to releasably engage one of said recesses; and a pair of downwardly opening socket portions at the edge of said shelf front portion



adapted to receive the upper ends of said bosses and having parts to closely engage the tapered rear surfaces of the bosses for supporting the front of said shelf and holding the shelf in place.

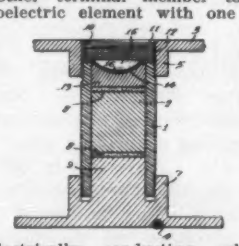
2,976,101. DROP GUARDS FOR REFRIGERATOR DOOR SHELVES. William J. Rooney, 840 S. Main St., Phillipsburg, N. J.



In a refrigerator, freezer or the like structure, a hollowed door having opposite side ends, a shelf proper fixed within the door and extending between the door side ends, a shelf guard having depending and rearwardly extending L-shaped hinge arms at the opposite ends thereof adapted to horizontally overlie the shelf when the guard is in its elevated position, means for respectively pivotally connecting the ends of said hinge arms to the respective side ends of the hollowed door, said pivote connecting means being elevated above the shelf a distance equal to the rearward length of the depending and rearwardly extending L-shaped hinge arms so that upon the guard being lowered to its horizontal position the depending parts of the hinge arms rest upon the top of the shelf. . . .

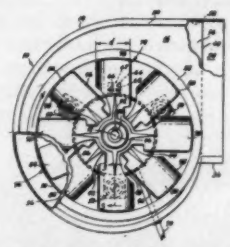
2,976,340. REFRIGERATOR APPARATUS. John B. Heinicke, Benton Harbor, and William J. Pretague, South Haven, Mich., assignors to Whirlpool Corp.

1. A thermoelectric assembly, comprising: a hollow dielectric connector; a thermoelectric element within said connector; a pair of spaced apart terminal members fastened to said connector and positioned one adjacent each end thereof with one terminal member in electrically conducting relation with said element; and a two-part joint themoelectrically connecting said other terminal member to the thermoelectric element with one part



on electrically conducting relation with said other terminal member and adjustably positionable thereon and the other part movably mounted within said connector and in electrically conducting relationship with said thermoelectric element, confronting portions of said parts being complementarily concavo-convex to permit surface contact therebetween not withstanding a skewed relationship between said parts.

2,976,352. BLOWER UNIT. Anwar A. Atalla, Torrington, Conn., assignor to The Torrington Mfg. Co., Torrington, Conn.



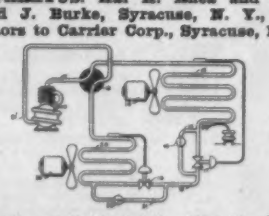
1. In a blower unit, the combination of a housing including a front side wall having a circular intake opening concentric with a central axis and including a second wall behind said front wall and parallel therewith, said housing having a peripheral discharge opening and having a chamber therein which is substantially closed except for said intake and discharge openings and which is unobstructed except for some of the hereinafter stated parts, a cylindrical shroud fitted within said intake opening, an electric motor including a drive shaft, means for supporting said motor with its drive shaft concentric with said central axis and with a portion of said shaft projecting toward the plane of said front wall. . . .

2,976,465. SEMICONDUCTOR DEVICES. James Lee Jensen, St. Louis Park, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

1. In a semiconductor assembly including a multi-electrode semiconductor apparatus having a plurality of electrode leads extending therefrom and semiconductor body having at least one relatively large junction arranged adjacent one surface thereof, said junction being mounted in good thermally conducting relationship with a heat conducting base member, said heat conducting base member having a flat mounting surface along a certain first plane, said flat mounting surface being particularly adapted for mounting onto a chassis member, said heat conducting base member being particularly characterized in that means are provided for insulatingly extending said leads through said base member along a certain second plane which is substantially elevated from said first plane.

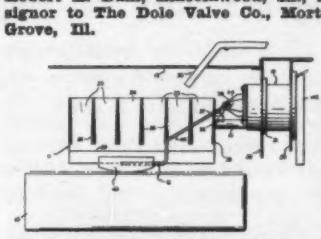
Week of March 28

2,976,696. HEATING AND COOLING APPARATUS. Hal H. Rhea and Edward J. Burke, Syracuse, N. Y., assignors to Carrier Corp., Syracuse, N.Y.



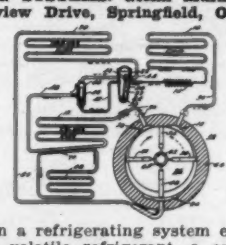
4. The method of defrosting the frost accumulating coil of a heat pump including a liquification coil and frost accumulating coil and means for interchanging the heat transfer function of each coil which consists in the steps of delivering liquid refrigerant to the frost accumulating coil from the liquification coil through an expansion device for metering liquid refrigerant to the frost accumulating coil while bypasing an automatic expansion device regulating flow of refrigerant to the liquification coil when the heat transfer functions of the coils are interchanged. . . .

2,976,697. AUTOMATIC ICEMAKER. Robert R. Dahl, Lincolnwood, Ill., assignor to The Dole Valve Co., Morton Grove, Ill.



1. In an automatic icemaker, an oscillatable tray having oppositely facing ice molds in heat transfer relation with respect to each other, metering means for filling the upwardly facing molds with a measured volume of water and loosening the ice pieces in the downwardly facing molds by the heat of the water filling the upwardly facing molds, power means actuated by the pressure of the water filling said metering means for moving said tray to bring the upwardly facing molds and the ice pieces therein in a downwardly facing release position. . . .

2,976,698. REVERSIBLE REFRIGERATING SYSTEMS. Glenn Muffly, 1541 Crestview Drive, Springfield, Ohio.



1. In a refrigerating system employing a volatile refrigerant, a compressor, means for starting said compressor in either direction of rotation, a valve for controlling flow of said refrigerant, a seat for said valve, and

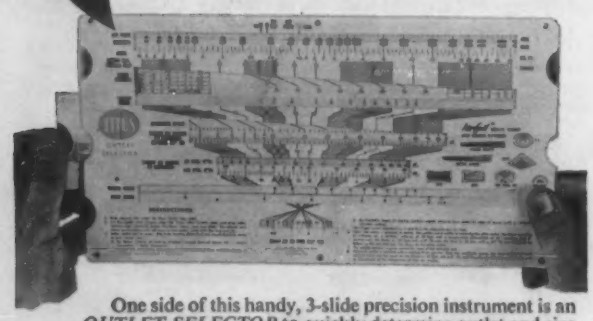
AGENTS WANTED

We are expanding our national sales organization and establishing new sales territories in Iowa, Nebraska, Kansas and Missouri, plus the area from Chicago east and from Tennessee and North Carolina north. We are looking for established sales agents calling on the plumbing, heating and sheet metal trade or on large industrial accounts. Our products include unit heaters, duct furnaces, residential heating equipment, water heaters and industrial air coolers. For agents who will give us good concentrated coverage, we offer better than average compensation. We are prepared to work with you to build a good sales volume through competitive prices and sound sales programs. Please send complete information including the size of your organization, territory covered, lines presently handled and the accounts you sell to Utility Appliance Corporation, 8111 West Beverly Boulevard, Los Angeles 48, California. All inquiries will receive a prompt reply.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

NEW TITUS SLIDE RULE

Combination Outlet Selector & Air Flow Calculator for ENGINEERS & CONTRACTORS



One side of this handy, 3-slide precision instrument is an *OUTLET SELECTOR* to quickly determine outlet and size based on available space and noise criteria. Other side of rule is *FLOW CALCULATOR* to determine air flow rate for any diffuser or grille from velocity measurements in the field.

Developed by H. Straub, P.E., Director of Titus Research Laboratory. Based on over 5 years of research. 6" x 11" in size. *Furnished complete with 24-page Instruction and Information Booklet for $2.50.*

MAIL COUPON WITH $2.50 TODAY

TITUS MFG. CORP., WATERLOO, IOWA

Please send Titus Slide Rule complete with instruction booklet. Enclosed is my check for $2.50.

NAME_____

ADDRESS_____

CITY_____ STATE_____

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

SERVICE ENGINEER with over twenty years' experience in all phases of refrigeration, air conditioning, heating. Desires permanent job with progressive company. W. M. McKINLEY, 4705 N. 30th Street, Ft. Smith, Arkansas. Phone SUnset 2-1207.

DO YOU want improved production and engineering results? I am willing to trade 20 years of refrigeration and sheet metal experience for the proper incentive. Not interested in just a job. Can carry through from an idea to production line including processing. BOX A6811, Air Conditioning, Heating & Refrigeration News.

SALES AND service engineer. 16 years' both absorption and electric. Also heating. With manufacturers, chain store, utility air conditioning department manager. Desire permanent position with limited travel. Have complete sales and service library and working tools. Write BOX A6812, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

DEVELOPMENT ENGINEER — packaged equipment. Trane's line of packaged equipment—residential air conditioners and furnaces, heat pumps, and self-contained, to 50 tons—is growing steadily. It's now our fastest growing product group. Exploration of new products requires an engineer with development experience in packaged equipment. Requirements: 5-8 years' experience, minimum of B.S.M.E. with good scholastic achievement, sound technical judgment, ability to work on new concepts rather than design details alone. Excellent salary and working environment in a fast-growing, well-managed company. For more complete information, write to Staff Employment Manager, THE TRANE COMPANY, La Crosse, Wisconsin.

EQUIPMENT FOR SALE

NOTICE: DISTRIBUTORS, dealers, servicemen, users refrigeration equipment—repair parts available all models Baker ammonia and Freon compressors. Also models 6B and F6B ammonia compressors. We are exclusive Baker export sales office. Manufacturers' export agents refrigeration, air conditioning and allied equipment. THE KEISER COMPANY, 1555 W. 79th St., Chicago 20, Illinois.

BRAND NEW icemaker pump motor and impeller repair kits for Scotsman Carrier $18.00 at Kesco wholesalers coast to coast. Bronze replacement icemaker pumps for York Carrier $29.95. Hose connection adaptors for York Carrier $1.00. Complete line condensate pumps from 10' to 50' head, 115-208-230 volts. Catalog. KESCO, Jamaica 13, N. Y.

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

WAREHOUSE CLEARANCE on Westinghouse furnaces. Utility model LP gas 100,000, 125,000, and 150,000 Btu. Horizontal LP gas 100,000 and 140,000 Btu. Utility oil 98,000 Btu. All new with full warranty at substantial savings under list price. For complete list write: BOX A6809, Air Conditioning, Heating & Refrigeration News.

ATTIC DUCTS (fiberglass with aluminum, all sizes); ceiling diffusers (square, 8" x 8" ID, 4-directional adjustable); return air grilles. Sold in kits for 2, 3, 4-h.p. units, or any lots. Quicker, less labor costs; proven by smart contractors in thousands of homes. Specially low priced! First come, first served. BOX 51, Hempstead, New York.

BUSINESS OPPORTUNITIES

FOR SALE — South Florida (Gold Coast) air conditioning and heating company. Sales-service. Twenty-one years' successful operation averaging in excess of $200,000 annual business with gross profit exceeding $55,000.00 annually. Owned buildings and land plus complete shop equipment, six trucks, two cars, inventory—furniture and fixtures. In addition, completely trained staff. Simply take over and operate. Owners illness forces sale. Priced at $84,500.00 complete. It is a real opportunity for someone to enjoy Florida living while receiving a handsome return on invested capital. For details, contact Rod Quick, MacCALLUM HAMMOND QUICK REALTY, INC., 235B Commercial Blvd., Lauderdale-by-the-Sea, Florida.

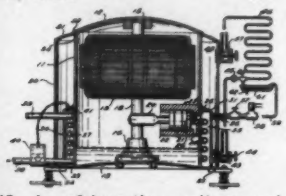
MISCELLANEOUS

ATTENTION SERVICEMEN — More than one half million refrigeration compressors are operating with 'Chicago' replacement valve plates and seals. See your wholesaler. CHICAGO VALVE PLATE & SEAL CO., 6960 W. Grand Ave., Chicago 35, Illinois.

SERVICING AUTO air conditioners? Then you'll save time and earn more money if you are fully informed on all types of systems on the market. They're described fully in "Servicing Automobile Air Conditioners" available in four volumes covering models from 1954 through 1959. Vols. 1, 2, and 4 are $2 each; Vol. 3 is only $1. See your wholesaler or order from BUSINESS NEWS PUBLISHING CO., Dept. B, 450 W. Fort, Detroit 26, Mich.

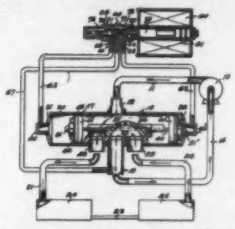
means associated with said valve for moving it relative to its seat, said means comprising a mass which is movable relative to the main body of said compressor and thus caused by its own inertia to move the valve in one direction relative to its seat when the compressor is started in one direction of rotation and in the opposite direction when the compressor is started in the reverse direction of rotation.

2,976,699. REFRIGERATION UNIT. Hugo C. Smith, Brecksville, Ohio, assignor to Hugo C. Smith Corp., Cleveland, Ohio.



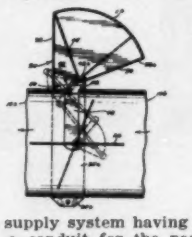
13. A refrigeration unit comprising a motor and a compressor, a housing surrounding said motor and compressor, said compressor having an intake port in communication with the interior of said housing, a second member joined to and surrounding said housing and providing an annular chamber constituting a receiver for refrigerant, said receiver being connected to the high pressure side of said compressor, a third member joined to and surrounding said housing and having a portion surrounding said receiver providing an annular chamber constituting an accumulator in heat exchange relation with said receiver, an evaporator. . . .

2,976,701. REVERSING VALVE FOR REFRIGERATING SYSTEMS. Frederick A. Greenawalt, Fort Lauderdale, Fla., assignor to Ranco Inc., Columbus, Ohio.



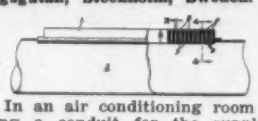
1. In a reversible-cycle refrigerating system having a compressor, a condenser and an evaporator connected in a refrigerating circuit including a valve mechanism to selectively reverse the order of flow of refrigerant through the condenser and evaporator, said valve mechanism including a tubular chamber having the interior thereof connected with the discharge and the intake of the compressor and with the condenser and evaporator respectively, valve means shiftable in said chamber between two positions to reverse the order of flow of refrigerant through the condenser and evaporator, piston means in said chamber operable to shift said valve means from one of said two positions to the other in response to a decrease in pressure at one end of said piston means relative to the other end. . . .

2,976,793. AIR PRESSURE REGULATOR FOR AIR CONVEYING CONDUITS. Arthur D. Cole, c/o Cole-Sewell Engineering Co., 2288 University Ave., St. Paul 14, Minn.



An air supply system having in combination, a conduit for the passage of air therethrough, an inlet at one end of said conduit communicating with a source of air under pressure, an outlet at the other end of said conduit, a damper in said conduit normally in opened position, a plurality of registers, conduits respectively connecting said registers with said outlet for communication therebetween, a vane housing having an upstanding rear wall of some height, an upstanding front wall of substantially lesser height and depending side strap-like portions adapted to be disposed about said conduit for the removable mounting of said vane housing on said conduit substantially in vertical alinement with said damper, sector-shaped side portions forming sides for said front and rear walls of said vane housing and extending forwardly of the same. . . .

2,976,794. HIGH-VELOCITY PRIMARY AIR NOZZLE. Claes Allander, Sodra Angby, and Birger Larkfeldt, Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Kungsgatan, Stockholm, Sweden.

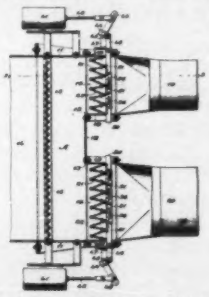


1. In an air conditioning room unit having a conduit for the supply of high-velocity primary air, means to admit secondary room air into said unit, and means to exhaust a mixture of primary and secondary air from said unit; an elongated nozzle element within said unit comprising a generally rectangular hollow frame connected at its inner end to the conduit and having a substantially plane outer surface, and a plurality of spaced parallel narrow partitions disposed transversely of said frame across its full width and coextensive in depth with said frame, said partitions defining a plurality of transverse spaced parallel narrow flow passages connected at their inner ends to said conduit, extending through said frame with uniform cross section throughout and terminating at their outer end in a like number of spaced parallel outlet openings creating a like number of flat streams of primary air flowing into said unit. . . .

2,976,795. AIR OUTLET GRILLE. Richard L. Brugler, Trotwood, Ohio, assignor to Chrysler Corp., Highland Park, Mich.

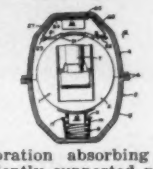
1. An air outlet grille comprising front and rear plates and a supporting structure retaining said plates in nested relation with the front plate positioned in parallel relationship relative to the rear plate and with said plates having adjacent surfaces, said supporting structure including means accommodating sliding movement of one plate relative to the other, said plates having cooperating apertures therein each of which has all of its sides converging to define a tapered aperture adapted to accommodate the discharge of air therethrough. . . .

2,976,884. VALVE STRUCTURES. Franz J. Kurth, Mamaroneck, N. Y., and Leonard R. Phillips, West Hartford, Conn., assignors to Anemostat Corp. of America, New York, N. Y.



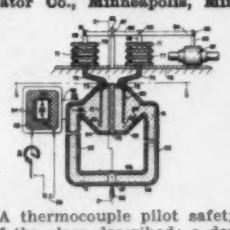
1. In a valve structure, a plurality of pivoted vanes, a bar extending transversely relative to said vanes and having therein and opening through an edge thereof slots in which free edge portions of said vanes are disposed whereby said bar is connected to said vanes for swinging them by longitudinal movement of said bar, and spring clips having their medial portions secured to said bar and their ends secured to the free edge portions of said vanes so as to retain said free edge portions in said slots when said vanes are either open or closed.

2,977,043. HERMETIC COMPRESSOR UNIT MOUNTING MEANS. Owen H. Scheldorf, Fern Creek, Ky., assignor to General Electric Co.



1. A vibration absorbing mounting for a resiliently supported motor compressor unit positioned within a casing comprising a spring member adapted to be secured to the top of said casing and having a pair of spaced spring fingers extending on each of two opposed sides of said unit, said fingers having hook-shaped end portions arranged in spaced relation with said casing and said unit, a stranded wire cable, fastening means for securing said cable to said unit to form a loop on each of said opposed sides of said unit, an inflexible sleeve enclosing each of side loops and having end portions disposed in the hooked end portions of the adjacent pair of said fingers, said pairs of said fingers subjecting said loops to horizontal tension forces to position said unit laterally in said casing. . . .

2,977,050. THERMOELECTRICALLY ENERGIZED CONTROL APPARATUS. Hubert T. Sparrow, Minneapolis, Minn., assignor to Minneapolis - Honeywell Regulator Co., Minneapolis, Minn.

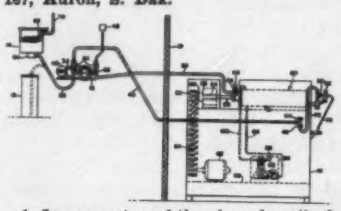


11. A thermocouple pilot safety control of the class described: a device to be operated; thermocouple means including metal enclosure means containing a conductive liquid metal; said enclosure means having two electrically independent junctions formed between said metals; current conduction means; heat means applied to one of said junctions to generate a potential between said electrically independent junctions; said potential causing a current to flow through said current conduction means between said junctions and in said liquid metal; thermostatically controlled magnetic flux generating means adjacent said enclosure means and passing a flux across said liquid metal perpendicular to said current flow; a plurality of variable volume chambers connected to said enclosure means and containing said liquid metal. . . .

2,977,103. COOLING TOWER STRUCTURE. Lewis B. Smith, McLean A. Ambrose, and Walter M. Hassenplug, Jackson, Mich., assignors to Acme Industries, Inc., Jackson, Mich.

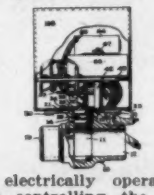
In a cooling tower, a deck comprising a pluarity of horizontally spaced parallel vertical plates, said plates being formed from a planar sheet of chemically inert plastic material, and being of planar configuration, a plurality of narrow, parallel, horizontal ribs of arcuate cross section formed on one side of said plate abruptly projecting from the plane thereof, embossed planar plate portions intermediate said ribs whereby liquid flowing down over said plates alternately moves over said embossed planar portions and the arcuate surface of said ribs. . . .

2,977,097. REFRIGERATION APPARATUS. Henry P. Cohrt, R.R. 2, Box 167, Huron, S. Dak.



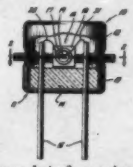
1. In apparatus of the class described, the combination of: means affording a mixing chamber having an inlet and an outlet; a pump having intake and discharge sides; means connecting the discharge side of the pump to the chamber inlet; a source of mixable material; a source of washing fluid; means connected to the pump intake and connectible selectively to either of said sources; air inlet means connected to the intake side of the pump; means for selectively opening and closing said air inlet means and operative to open said air inlet means when the pump intake is connected to the source of mixable material and to close said air inlet means when the pump intake is connected to the source of washing fluid; and mean capacitating the chamber outlet selectively to dispense mixed material or for connection to the pump intake for circulating washing fluid when the pump intake is connected to the source of washing fluid.

2,977,437. ELECTRICALLY ACTUATED ROTARY VALVE FOR ZONE HEAT CONTROL. Daniel B. Doane, N. Main St., Essex, Conn.



1. An electrically operated rotary valve for controlling the flow of a heating or cooling medium through a conduit comprising a rotary valve member adapted to be mounted in said conduit for rotation therewithin through 360°, a stem connected to said rotary valve member, a base plate attached to said conduit having an opening therein coaxial with said stem, a second plate mounted above said base plate, a rotary switch positioned between said base plate and said second plate. . . .

2,977,515. SEMICONDUCTOR FABRICATION. Ford K. Clarke, Chalfont, and Walter L. Doelp, Jr., Doylestown, Pa., assignors to Philco Corp., Philadelphia, Pa.



1. An encapsulated semiconductor device comprising: a body of semiconductive material; structure defining an hermetic enclosure for said body, and individual, separately formed means supporting said body within said enclosure interposed in a mechanical connection between said body and enclosure, said latter means including an arcuately-shaped member joined in cold-welded juncture to heat conductive portions of said enclosure, said first mentioned means making contact to regions contiguous a rectifying barrier region of said body and forming a path of low thermal impedance between said region of said body and heat conductive portions of said enclosure.

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

PREVENT costly downtime with anco condenser cleaner

No shutdown needed! Reduce headpressure within a few hours with one application of ANCO Condenser Cleaner. This concentrated, dry chemical is harmless to hands yet quickly and effectively removes heaviest rust and scale in condenser tubes. Equipment stays in operation!

- *Dry Chemical*
- *No Fumes*
- *No Corrosion*
- *Fast Acting*
- *Easy to Use*
- *Inexpensive*
- *Safe to Handle*

ANCO WATER TREATMENT cleans and protects circulating systems from rust and scale for peak operating efficiency.

ANCO ALGAECIDE removes and prevents growth of algae, fungi and slime in cooling towers and condensers.

Buy ANCO for sure profits

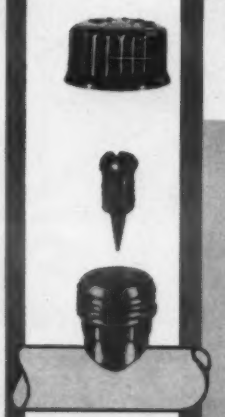
- √ Condenser Cleaner
- √ Water Treatment
- √ Algaecide

Anderson Chemical Company, Inc.
Box 1424 • Macon, Georgia

Perfect, Permanent Installation...Every Time!

WITH THE WATSCo GOLD SEAL

ACCESS SADDLE VALVE



Here's the valve that does the job... Best! Provides a permanent leakproof port for testing, charging, and discharging.

This tube piercing Access Saddle Valve is contoured to fit and can be soldered or brazed to any convenient part of the tubing. Available in five sizes for ¼" to ⅝" O.D. TUBE.

U.S. PAT. NO. 2,827,913

Use with Control Valve CV-1G or CV-2G

SWIVEL CONTROL VALVE

PART NO. CV-1 G
A lifetime valve with a screwdriver tip, screws onto and operates all WATSCO GOLD SEAL TAPPING VALVES.

ACCESS "T" VALVE

- The Access "T" Valve is soldered or brazed into the branch end of any solder tee fitting, thus providing a permanent leakproof port for servicing sealed or open units. Available in five sizes for ¼" to ⅝" I.D. Branch openings.
- For additional information, see your wholesaler or write Dept. N-71.

WATSCo INC.
1020 EAST 15th STREET, HIALEAH, FLORIDA

Without a Single Coupling

Underground Tubes To Furnish Heating, Cooling for 11-Story St. John's Hospital

ST. LOUIS — In an unusual engineering installation here, a set of large-size copper tube, up to 10 in. in diameter, heliarc-welded end to end, to form continuous lengths of more than 1,000 ft each, will travel underground through tunnels from the power house to furnish heating and air conditioning for the 11-story St. John's hospital under construction here.

Not a single coupling will be used, the tube being welded on the job, it was stressed.

The Lewin-Mathes Co., St. Louis copper refiner and fabricator, a division of the Cerro Corp., is supplying copper tube for the heating and air conditioning.

The air conditioning system, according to Louis Cardwell, project engineer for Natkin & Co., St. Louis, which has the installation contract for heating and air conditioning, will provide individually-controlled temperature for each of 500 rooms at the hospital (later 600), including surgery and administrative, and a combined Nurses Home and Training School, 300 additional rooms.

Cardwell explained that the installation started with some pre-fabrication work on the tube in the Natkin plant prior to delivery to the site. Then working from both ends of the tunnel, specially built hand trucks carry the welding torch, with gas, water, and electric leads, the argon gas, a coolant water circulating system, and the various tools needed. The workmen then bevel the pipe ends, clean with the buffing wheel, align the pipe, apply the flux, pre-heat to approximately 500°F and make two passes with the heliarc torch.

St. John's hospital was built by the Sisters of Mercy in 1871 in the center of the city. The hospital having outgrown its quarters, a new site was selected of 72 acres out in the country. The hospital is scheduled for completion in the fall of 1963.

Bernard MacMahon is the architect on the project; Delaney, Sheldon & Associates, Inc., consulting engineers. The Trane Co. built the air conditioning equipment; the copper tube supplied through the Independent Plumbing & Heating Supply Co., a Lewin-Mathes distributor.

Smog Blamed--

(Continued from Page 1, Col. 3)

that the total number of deaths attributable to the "smog" conditions reached the 170 or more total.

In the summary and conclusions of the study, which was carried out by a committee of distinguished health and air pollution authorities headed by Dr. Leonard Greenburg, formerly commissioner of air pollution control for New York City, it was stated:

1) An anticyclone associated with temperature inversions dominated the New York City area from Nov. 12 to Nov. 21, 1953.

2) During this period, air pollution in terms of sulphur dioxide and smoke shade increased and reached unusually high levels as the temperature inversion intensified.

3) During this period, New York City mortality data disclosed a statistically significant increase in the number of deaths. This increase apparently was generally distributed over all age groups.

Aeroquip Appoints Don T. McKone, Jr.

JACKSON, Mich. — The appointment of Don T. McKone, Jr., as executive vice president in charge of domestic manufacturing and sales operations has been announced by Peter F. Hurst, president of Aeroquip Corp.

Prior to his promotion, McKone was a vice president and a director of the company, having been elected to the board in January, 1961. He has been with Aeroquip since 1949.

Subcontractors--

(Continued from Page 1, Col. 5)

called bid shopping bill was defeated. These meetings have also led to an effort on the part of the construction industry to liberalize the retained percentage formula.

The Plasters' and Lathers' association have agreed, by resolution passed at convention, to enter such a federation, the only stipulation being that any votes for action by any such federation must be unanimous.

'Winter Itch'

Dermatologist Says Too Much Summer Air Conditioning Can Cause It

NEW YORK CITY—Air conditioning is a fine thing, but too much of it can cause a skin disease called "winter itch," according to a Houston, Texas, dermatologist.

Dr. Marvin E. Chernosky claims to be the first doctor to recognize air conditioning disease—an itch brought on by the skin being kept always dry by air conditioning in the home, the office, and the car.

In a report to the American Medical Association, Dr. Chernosky told of 18 patients who have suffered from the summertime itch.

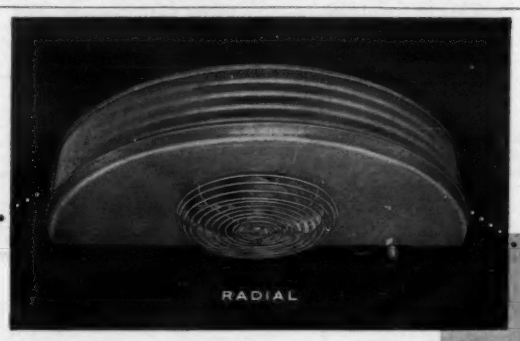
"They literally run from one air conditioned place to another," even riding in air conditioned cars, and they avoid outdoor sports and activities, he stated.

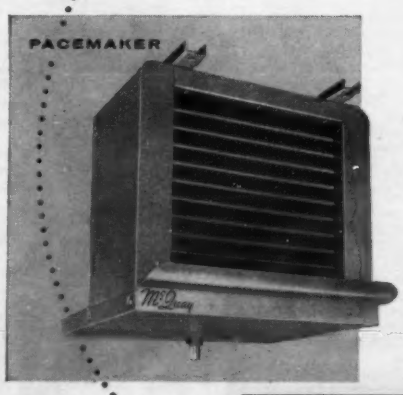
He said skin of the arms, legs, face, neck, and other parts of the body became dry and brittle, chapped, or split. Itching prompted scratching, which caused redness and swelling.

When a person goes from the humid summer outdoors into an air conditioned building, the skin experiences a sudden drop in humidity, Dr. Chernosky pointed out.

This speeds the evaporation of moisture from the skin, which speeds the drying effect. And people don't perspire to moisten their skin.

The doctor said the disease can be cleared up quickly if treated in early stages.





THE McQuay REFRIGERATION LINE IS COMPLETE

an outstanding unit for every requirement

Whatever your refrigeration requirements may be, you will find a McQuay unit to exactly meet your needs. And, every unit is tops in its field due to McQuay's incomparable manufacturing and engineering know-how, coupled, of course, with the famous McQuay Ripple-Fin coils for highest performance and efficiency. In addition to the unit coolers shown here, the McQuay line includes electric and hot gas defrost systems, gravity coils, product freezers and product coolers, residential evaporators, fan coil units, large capacity air conditioners and the popular Aircon air cooled condensers. All are available in the widest possible range of sizes and capacities, and are very favorably priced for quality products. For complete information, see your refrigeration wholesaler, or write McQuay, Inc., 1607 Broadway N. E., Minneapolis 13, Minnesota.

MAKE THE SEASONS COME TO YOU

McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION